Dossier
Tim Menzies
2019-2020

Department of Computer Science
North Carolina State University
email: tjmenzie@csc.ncsu.edu;
URL: http://menzies.us

(Note: All new material for the most recent year is highlighted like this.)
NORTH CAROLINA STATE UNIVERSITY
STATEMENT OF FACULTY RESPONSIBILITIES

MENZIES, TIMOTHY JAMES

Realms of Responsibility

Teaching and Mentoring of Undergraduate and Graduate Students 45%

Approximate effort to be devoted to this realm of responsibility: 45%

Dr. Menzies will commit to quality teaching consistent with the mission of the University and of the Department of Computer Science.

Dr. Menzies is expected to each three courses per year, in the areas of undergrad and graduate SE (or related CS subjects). Also, to serve on graduate committees for graduate exams for graduate degrees via research.

Discovery of Knowledge through Discipline-Guided Inquiry 45%

Approximate effort to be devoted to this realm of responsibility: 45%

Dr. Menzies will commit to quality research consistent with the mission of the University, of the Department of Computer Science.

Dr. Menzies will continue to maintain an externally funded research program in the area of software engineering and to disseminate original contributions to the field of research through peer-reviewed journals or other means appropriate to the discipline.

Service in Professional Societies and within the University 10%

Approximate percent effort to be devoted to this realm of responsibility: 10%

Dr. Menzies will contribute to the programs and governance of the University, the College of Engineering, and the Computer Science Department as requested or desired.

Dr. Menzies will commit to quality efforts in proving service to professional societies and other organizations outside of the University as appropriate to his disciplinary area and professional interests.

Performance Standards

This document summarizes the percent effort expected within each realm of responsibility appropriate to Timothy James Menzies. Fulfilling the responsibilities defined above is necessary but not sufficient for reappointment, promotion, reappointment, or post-tenure review. Timothy James Menzies is expected to meet and strive to exceed performance standards in each of the above realms of responsibility and to an extent commensurate with the percent effort indicated.

Reappointment, promotion, and tenure performance standards are documented in the Department of Computer Science Reappointment, Promotion and Tenure (RPT) Standards and Procedures Rule [RUL 05.67.302], the College of Engineering RPT Standards and Procedures Rule [RUL 05.67.308], and relevant University policies and regulations [POL 05.20.01]. Post-tenure review performance standards for tenured faculty are documented in the Department of Computer Science Post Tenure Review (PTR) Standards and Procedures Rule [RUL 05.68.31], the College of Engineering PTR Standards and Procedures Rule [RUL 05.68.80], and relevant University policies and regulations [REG 05.20.04].

It is the responsibility of the department head(s) to ensure that appropriate performance standards are available for all of their faculty members. It is the responsibility of the faculty member and departmental voting faculty to review all applicable standards.

Signatories

Timothy James Menzies
Professor

[Signature]

Date: Jan 27, 2020

Gregg Evan Rothermel
Department Head

[Signature]

Date:
BRIEF RESUME
1. Education background:
   • Ph.D., CS, University of New South Wales, 1995 *Generalized Testing of Knowledge Bases*; Advisor Paul Compton
   • Masters of Cognitive Science, University of New South Wales, Australia, 1988
   • B.S. Computer Science, University of New South Wales, 1985.

2. Professional experience:
   • August 2014 to present: Professor, CS, North Carolina State University, Raleigh, NC
   • May 2012 to August 2014: Professor, West Virginia University, Morgantown, WV
   • February 2006 to April 2012, Associate Professor, West Virginia University, Morgantown, WV
   • December 2001 to December 2003, SE research chair, NASA IV&V Facility, West Virginia
   • July 2000 to January 2001: Assistant professor, University of British Columbia, Vancouver, CA
3. Scholarly and creative activities:

<table>
<thead>
<tr>
<th>Books</th>
<th>Career</th>
<th>Post Tenure</th>
<th>Current Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edited books and Proceedings</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Refereed book chapters</td>
<td>13</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Papers, Articles, Patents, Reports, etc.</th>
<th>Career</th>
<th>Post Tenure</th>
<th>Current Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refereed journal articles</td>
<td>86</td>
<td>57</td>
<td>8</td>
</tr>
<tr>
<td>Refereed magazine articles</td>
<td>18</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Other magazine articles</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Refereed conference papers</td>
<td>129</td>
<td>68</td>
<td>5</td>
</tr>
<tr>
<td>Refereed workshop papers</td>
<td>70</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>Refereed panel papers</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Refereed posters/fast abstract</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Technical reports</td>
<td>4</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Refereed tutorials</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Course pack (with ISBN)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>News interviews</td>
<td>4</td>
<td>2</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Talks, Presentations</th>
<th>Career</th>
<th>Post Tenure</th>
<th>Current Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keynotes and distinguished speaker</td>
<td>10</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Other invited talks</td>
<td>12</td>
<td>12</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Funded Research, Development and Teaching</th>
<th>Career</th>
<th>Post Tenure</th>
<th>Current Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contracts and Grants</td>
<td>$11,685,872</td>
<td>$9,825,911</td>
<td>$2,775,000</td>
</tr>
<tr>
<td>Gifts (cash)</td>
<td>$850,000</td>
<td>$850,000</td>
<td>$170,000</td>
</tr>
<tr>
<td>Gifts (in kind)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other: PhD Fellowships</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mentoring and Supervision (see CV for details)</th>
<th>Career</th>
<th>Post Tenure</th>
<th>Current Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD (chair/co-chair), graduated</td>
<td>12</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>PhD (chair/co-chair), current</td>
<td>-</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>MS (chair/co-chair), graduated</td>
<td>32</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>MS (chair/co-chair), current</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Undergraduate advisees, graduated</td>
<td>7</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Faculty mentored</td>
<td>12</td>
<td>12</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Courses taught</th>
<th>Career</th>
<th>Post Tenure</th>
<th>Current Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular undergraduate (3 credits, 10&lt; x &lt; 100 students)</td>
<td>10</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Large undergraduate (3 credits, x &gt; 100 students)</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Regular graduate (3 credits, 10&lt; x &lt; 100 students)</td>
<td>37</td>
<td>26</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Courses created and/or revised in a significant way</th>
<th>Career</th>
<th>Post Tenure</th>
<th>Current Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>5</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Graduate</td>
<td>8</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other</th>
<th>Career</th>
<th>Post Tenure</th>
<th>Current Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of Software Packages</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Creation/Direction of Dept. Facilities – Labs &amp; Centers</td>
<td>6</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Major awards and recognitions</td>
<td>12</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Major off-campus services</td>
<td>15</td>
<td>10</td>
<td>4</td>
</tr>
</tbody>
</table>
4. Membership in professional organizations:
   • Association for Computing Machinery (ACM), 1996-pot
   • Institute of Electrical and Electronic Engineers (IEEE), 1997-present
   • Promotion to IEEE senior member in 2017
   • Elevated to IEEE Fellow, 2019.

5. Scholarly and professional honors:
   1. ACM Sigsoft Distinguished paper award, ICSE’19, “iSENSE: Completion-Aware Crowdsourcing Management”
   2. Most Influential Paper Award (from ICSM 2009) “On the use of Relevance Feedback in IR-based Concept Location”
   3. ACM TOSEM journal distinguished reviewer 2011-2018 (only person to receive that award for all those years)
   5. Inaugural Mining Software Repositories Foundational Contribution Award., 2017
   6. Carol Miller Graduate Lecturer Award, Association for Computing Machinery/Association of Information Technology Professionals, 2016
   10. Distinguished reviewer, ACM Transactions on SE Methodologies, 2015
   11. WVU College of Engineering, Outstanding Researcher, 2010
   12. NASA Commendation for Chief of Mission Assurance, 2004

6. Professional service on campus:
   • Proxy to the chair at college meetings
   • Chair, faculty search committee
   • Member, departmental graduate review committee
   • NC State Member , CSC Faculty Search (2015, 2016,2017)
   • Curating the PROMISE repository of SE data. That work recently won me the inaugural Mining Software Repositories Foundational Contribution Award. See http://2017.msrconf.org/#/awards
   • NC State Member , Software Engineering Faculty Search (2014)
   • NC State, Open house weekend (March 2015)
   • BβWVU, computer science, Promotion & Tenure committee (2010-2014)
   • WVU, Member, Faculty Search Committees (2010-2013)
   • Director, National Archives/WVU project (2009-2011)
   • Director, WVU/NASA Research Collaboration (2002-2009)

7. Professional service off campus (see CV for complete list):
   • Artifacts co-chair, icse’20
   • ROSE Festival Organizer, FSE’18, ICSE’19, ICSE’20
   • Co-PC PROMISE’20
   • Co-PC chair, SSBSE’17
   • Co-chair, SWAN’17
   • Co-General Chair: International Conference on Software Maintenance and Evolution 2016
   • Co-Program Chair: SSBSE’17, ICSE NIER’15, ASE’12.
   • Editorial board: ACM Transactions on Software Engineering ( 
   • Associated Editor: Information Software Technology
   • Editorial Board: Software Quality Journal
   • Editorial Board: Big Data Research Journal.
   • Chair, IEEE Software editor review board, 2016
   • Steering Committee Member:
     • 1IEEE Automated Software Engineering (2012-present)
     • PROMISE conference 2005-2012.
   • PC member: ASE’20, ESEM’20, ICSE20, MSR/19, FSE’19, ICSE’20 ICSE,18, IEEE
- Distinguished paper committee: MSR'20
- IEEE Fellow award committee (2020)

II. TEACHING AND MENTORING OF UNDERGRADUATE AND GRADUATE STUDENTS

A. TEACHING EFFECTIVENESS

<table>
<thead>
<tr>
<th>Term</th>
<th>Fall</th>
<th>Sprg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>2019</td>
<td>2019</td>
</tr>
<tr>
<td>Course</td>
<td>CSC 591 021</td>
<td>CSC 417 001</td>
</tr>
<tr>
<td>Courses</td>
<td>CSC 591 021, CSC 791 021</td>
<td>CSC 417 001</td>
</tr>
<tr>
<td>Title</td>
<td>SP Topic CSC</td>
<td>Theory Prog Lang</td>
</tr>
<tr>
<td>Responses</td>
<td>33</td>
<td>9</td>
</tr>
<tr>
<td>Enrolled</td>
<td>58</td>
<td>38</td>
</tr>
<tr>
<td>Response Rate</td>
<td>56.90%</td>
<td>23.68%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column1</th>
<th>Col1</th>
<th>SEM</th>
<th>N</th>
<th>Dept Mean</th>
<th>Col1</th>
<th>SEM</th>
<th>N</th>
<th>Dept Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teaching aligned with the courses learning objectives/outcomes</td>
<td>4.5</td>
<td>0.12</td>
<td>33</td>
<td>0.0</td>
<td>3.9</td>
<td>0.35</td>
<td>9</td>
<td>4.4</td>
</tr>
<tr>
<td>2. The instructor was receptive to students outside the classroom</td>
<td>4.7</td>
<td>0.08</td>
<td>33</td>
<td>0.0</td>
<td>4.3</td>
<td>0.24</td>
<td>9</td>
<td>4.2</td>
</tr>
<tr>
<td>3. The instructor explained material well.</td>
<td>4.6</td>
<td>0.10</td>
<td>33</td>
<td>0.0</td>
<td>4.0</td>
<td>0.37</td>
<td>9</td>
<td>4.0</td>
</tr>
<tr>
<td>4. The instructor was enthusiastic about teaching the course</td>
<td>4.8</td>
<td>0.06</td>
<td>33</td>
<td>0.0</td>
<td>4.8</td>
<td>0.15</td>
<td>9</td>
<td>4.4</td>
</tr>
<tr>
<td>5. The instructor was prepared for class</td>
<td>4.7</td>
<td>0.14</td>
<td>33</td>
<td>0.0</td>
<td>4.1</td>
<td>0.42</td>
<td>9</td>
<td>4.4</td>
</tr>
<tr>
<td>6. The instructor gave useful feedback.</td>
<td>4.5</td>
<td>0.15</td>
<td>33</td>
<td>0.0</td>
<td>4.0</td>
<td>0.41</td>
<td>9</td>
<td>4.0</td>
</tr>
<tr>
<td>7. The instructor consistently treated students with respect</td>
<td>4.8</td>
<td>0.07</td>
<td>33</td>
<td>0.0</td>
<td>4.3</td>
<td>0.24</td>
<td>9</td>
<td>4.4</td>
</tr>
<tr>
<td>8. Overall, the instructor was an effective teacher</td>
<td>4.6</td>
<td>0.11</td>
<td>33</td>
<td>0.0</td>
<td>3.7</td>
<td>0.33</td>
<td>9</td>
<td>4.1</td>
</tr>
<tr>
<td>9. The course materials were valuable aids to learning</td>
<td>4.3</td>
<td>0.18</td>
<td>33</td>
<td>0.0</td>
<td>3.7</td>
<td>0.37</td>
<td>9</td>
<td>4.1</td>
</tr>
<tr>
<td>10. The course assignments were valuable aids to learning</td>
<td>4.4</td>
<td>0.16</td>
<td>33</td>
<td>0.0</td>
<td>3.7</td>
<td>0.37</td>
<td>9</td>
<td>4.1</td>
</tr>
<tr>
<td>11. This course improved my knowledge of the subject</td>
<td>4.4</td>
<td>0.16</td>
<td>33</td>
<td>0.0</td>
<td>4.2</td>
<td>0.22</td>
<td>9</td>
<td>4.3</td>
</tr>
<tr>
<td>12. Overall, this course was excellent</td>
<td>4.4</td>
<td>0.16</td>
<td>33</td>
<td>0.0</td>
<td>3.7</td>
<td>0.37</td>
<td>9</td>
<td>3.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Term</th>
<th>Fall</th>
<th>Sprg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>2018</td>
<td>2018</td>
</tr>
<tr>
<td>Course</td>
<td>CSC 591 023</td>
<td>CSC 510 001</td>
</tr>
<tr>
<td>Courses</td>
<td>CSC 591 023, CSC 791 023</td>
<td>CSC 510 001</td>
</tr>
<tr>
<td>Title</td>
<td>SP Topic CSC</td>
<td>Software Engineering</td>
</tr>
<tr>
<td>Responses</td>
<td>14</td>
<td>35</td>
</tr>
<tr>
<td>Enrolled</td>
<td>23</td>
<td>68</td>
</tr>
<tr>
<td>Response Rate</td>
<td>60.87%</td>
<td>51.47%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column1</th>
<th>Col1</th>
<th>SEM</th>
<th>N</th>
<th>Dept Mean</th>
<th>Col1</th>
<th>SEM</th>
<th>N</th>
<th>Dept Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teaching aligned with the courses learning objectives/outcomes</td>
<td>4.2</td>
<td>0.32</td>
<td>14</td>
<td>0.0</td>
<td>3.7</td>
<td>0.19</td>
<td>35</td>
<td>4.3</td>
</tr>
<tr>
<td>2. The instructor was receptive to students outside the classroom</td>
<td>4.4</td>
<td>0.25</td>
<td>14</td>
<td>0.0</td>
<td>4.0</td>
<td>0.19</td>
<td>35</td>
<td>4.3</td>
</tr>
<tr>
<td>3. The instructor explained material well.</td>
<td>4.2</td>
<td>0.19</td>
<td>14</td>
<td>0.0</td>
<td>3.6</td>
<td>0.21</td>
<td>35</td>
<td>4.0</td>
</tr>
<tr>
<td>4. The instructor was enthusiastic about teaching the course</td>
<td>4.4</td>
<td>0.31</td>
<td>14</td>
<td>0.0</td>
<td>4.2</td>
<td>0.19</td>
<td>35</td>
<td>4.4</td>
</tr>
<tr>
<td>5. The instructor was prepared for class</td>
<td>4.2</td>
<td>0.24</td>
<td>14</td>
<td>0.0</td>
<td>3.9</td>
<td>0.19</td>
<td>35</td>
<td>4.3</td>
</tr>
<tr>
<td>6. The instructor gave useful feedback.</td>
<td>4.2</td>
<td>0.19</td>
<td>14</td>
<td>0.0</td>
<td>3.9</td>
<td>0.19</td>
<td>33</td>
<td>4.1</td>
</tr>
<tr>
<td>7. The instructor consistently treated students with respect</td>
<td>4.4</td>
<td>0.25</td>
<td>14</td>
<td>0.0</td>
<td>3.9</td>
<td>0.20</td>
<td>35</td>
<td>4.4</td>
</tr>
<tr>
<td>8. Overall, the instructor was an effective teacher</td>
<td>4.3</td>
<td>0.30</td>
<td>14</td>
<td>0.0</td>
<td>3.8</td>
<td>0.18</td>
<td>35</td>
<td>4.1</td>
</tr>
<tr>
<td>9. The course materials were valuable aids to learning</td>
<td>4.1</td>
<td>0.29</td>
<td>14</td>
<td>0.0</td>
<td>3.7</td>
<td>0.21</td>
<td>34</td>
<td>4.1</td>
</tr>
<tr>
<td>10. The course assignments were valuable aids to learning</td>
<td>4.1</td>
<td>0.29</td>
<td>14</td>
<td>0.0</td>
<td>3.9</td>
<td>0.21</td>
<td>34</td>
<td>4.2</td>
</tr>
<tr>
<td>11. This course improved my knowledge of the subject</td>
<td>4.2</td>
<td>0.30</td>
<td>14</td>
<td>0.0</td>
<td>3.8</td>
<td>0.22</td>
<td>34</td>
<td>4.3</td>
</tr>
<tr>
<td>12. Overall, this course was excellent</td>
<td>4.3</td>
<td>0.32</td>
<td>14</td>
<td>0.0</td>
<td>3.6</td>
<td>0.22</td>
<td>34</td>
<td>4.1</td>
</tr>
<tr>
<td>Term</td>
<td>Sprg</td>
<td>Fall</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>2018</td>
<td>2017</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>CSC 495 002</td>
<td>CSC 591 023</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses</td>
<td>CSC 495 002, CSC 591 023, CSC 791 023</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>SP Top Comp Sci</td>
<td>SP Topic CSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responses</td>
<td>15</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrolled</td>
<td>43</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response Rate</td>
<td>34.88%</td>
<td>52.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Column 1

<table>
<thead>
<tr>
<th>1. Teaching aligned with the courses learning objectives/outcomes</th>
<th>Mean</th>
<th>SEM</th>
<th>N</th>
<th>Dept Mean</th>
<th>SEM</th>
<th>Dept</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. The instructor was receptive to students outside the classroom</td>
<td>2.9</td>
<td>0.35</td>
<td>15</td>
<td>4.4</td>
<td>0.18</td>
<td>13</td>
</tr>
<tr>
<td>3. The instructor explained material well.</td>
<td>3.0</td>
<td>0.34</td>
<td>15</td>
<td>4.2</td>
<td>0.46</td>
<td>13</td>
</tr>
<tr>
<td>4. The instructor was enthusiastic about teaching the course</td>
<td>4.5</td>
<td>0.13</td>
<td>15</td>
<td>4.4</td>
<td>0.49</td>
<td>0.08</td>
</tr>
<tr>
<td>5. The instructor was prepared for class</td>
<td>3.2</td>
<td>0.37</td>
<td>15</td>
<td>4.4</td>
<td>0.45</td>
<td>0.18</td>
</tr>
<tr>
<td>6. The instructor gave useful feedback.</td>
<td>2.7</td>
<td>0.38</td>
<td>15</td>
<td>4.1</td>
<td>0.45</td>
<td>0.20</td>
</tr>
<tr>
<td>7. The instructor consistently treated students with respect</td>
<td>3.0</td>
<td>0.39</td>
<td>15</td>
<td>4.4</td>
<td>0.44</td>
<td>0.24</td>
</tr>
<tr>
<td>8. Overall, the instructor was an effective teacher</td>
<td>3.0</td>
<td>0.28</td>
<td>15</td>
<td>4.2</td>
<td>0.43</td>
<td>0.19</td>
</tr>
<tr>
<td>9. The course materials were valuable aids to learning</td>
<td>3.2</td>
<td>0.34</td>
<td>15</td>
<td>4.1</td>
<td>0.42</td>
<td>0.20</td>
</tr>
<tr>
<td>10. The course assignments were valuable aids to learning</td>
<td>3.5</td>
<td>0.29</td>
<td>15</td>
<td>4.2</td>
<td>0.44</td>
<td>0.18</td>
</tr>
<tr>
<td>11. This course improved my knowledge of the subject</td>
<td>3.5</td>
<td>0.31</td>
<td>15</td>
<td>4.3</td>
<td>0.45</td>
<td>0.18</td>
</tr>
<tr>
<td>12. Overall, this course was excellent</td>
<td>2.9</td>
<td>0.30</td>
<td>15</td>
<td>4.0</td>
<td>0.42</td>
<td>0.20</td>
</tr>
</tbody>
</table>

### Column 1

<table>
<thead>
<tr>
<th>Term</th>
<th>Sprg</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>2017</td>
<td>2016</td>
</tr>
<tr>
<td>Course</td>
<td>CSC 510 001</td>
<td>CSC 591 007</td>
</tr>
<tr>
<td>Courses</td>
<td>CSC 510 001</td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>Software Engineering</td>
<td>SP Topic CSC</td>
</tr>
<tr>
<td>Responses</td>
<td>21</td>
<td>36</td>
</tr>
<tr>
<td>Enrolled</td>
<td>33</td>
<td>38</td>
</tr>
<tr>
<td>Response Rate</td>
<td>63.64%</td>
<td>94.74%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. Teaching aligned with the courses learning objectives/outcomes</th>
<th>Mean</th>
<th>SEM</th>
<th>N</th>
<th>Dept Mean</th>
<th>SEM</th>
<th>Dept</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. The instructor was receptive to students outside the classroom</td>
<td>4.1</td>
<td>0.19</td>
<td>21</td>
<td>4.2</td>
<td>0.12</td>
<td>36</td>
</tr>
<tr>
<td>3. The instructor explained material well.</td>
<td>4.5</td>
<td>0.17</td>
<td>20</td>
<td>4.3</td>
<td>0.45</td>
<td>0.09</td>
</tr>
<tr>
<td>4. The instructor was enthusiastic about teaching the course</td>
<td>4.9</td>
<td>0.07</td>
<td>21</td>
<td>4.2</td>
<td>0.47</td>
<td>0.09</td>
</tr>
<tr>
<td>5. The instructor was prepared for class</td>
<td>4.2</td>
<td>0.21</td>
<td>21</td>
<td>4.2</td>
<td>0.44</td>
<td>0.12</td>
</tr>
<tr>
<td>6. The instructor gave useful feedback.</td>
<td>4.4</td>
<td>0.19</td>
<td>21</td>
<td>4.0</td>
<td>0.43</td>
<td>0.13</td>
</tr>
<tr>
<td>7. The instructor consistently treated students with respect</td>
<td>4.3</td>
<td>0.09</td>
<td>21</td>
<td>4.4</td>
<td>0.46</td>
<td>0.09</td>
</tr>
<tr>
<td>8. Overall, the instructor was an effective teacher</td>
<td>4.3</td>
<td>0.17</td>
<td>21</td>
<td>4.0</td>
<td>0.41</td>
<td>0.15</td>
</tr>
<tr>
<td>9. The course materials were valuable aids to learning</td>
<td>4.0</td>
<td>0.23</td>
<td>21</td>
<td>4.1</td>
<td>0.42</td>
<td>0.15</td>
</tr>
<tr>
<td>10. The course assignments were valuable aids to learning</td>
<td>4.1</td>
<td>0.27</td>
<td>21</td>
<td>4.2</td>
<td>0.43</td>
<td>0.14</td>
</tr>
<tr>
<td>11. This course improved my knowledge of the subject</td>
<td>4.0</td>
<td>0.24</td>
<td>21</td>
<td>4.2</td>
<td>0.43</td>
<td>0.15</td>
</tr>
<tr>
<td>12. Overall, this course was excellent</td>
<td>4.1</td>
<td>0.23</td>
<td>21</td>
<td>4.0</td>
<td>0.42</td>
<td>0.14</td>
</tr>
<tr>
<td>Term</td>
<td>Fall</td>
<td>Sprg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>------------</td>
<td>------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>2016</td>
<td>2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>CSC 591 006</td>
<td>CSC 510 001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses</td>
<td>Title</td>
<td>Responses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SP Topic CSC</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Title</td>
<td>Enrolled</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Software Engineering</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Response Rate</td>
<td>66.67%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>70.18%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Mea</th>
<th>SEM</th>
<th>N</th>
<th>Dept Mea</th>
<th>SEM</th>
<th>Dept</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teaching aligned with the courses learning objectives/outcomes</td>
<td>4.5</td>
<td>0.27</td>
<td>8</td>
<td>4.3</td>
<td>0.13</td>
<td>40</td>
</tr>
<tr>
<td>2. The instructor was receptive to students outside the classroom</td>
<td>4.6</td>
<td>0.18</td>
<td>8</td>
<td>4.3</td>
<td>0.12</td>
<td>40</td>
</tr>
<tr>
<td>3. The instructor explained material well</td>
<td>4.6</td>
<td>0.18</td>
<td>8</td>
<td>4.0</td>
<td>0.11</td>
<td>40</td>
</tr>
<tr>
<td>4. The instructor was enthusiastic about teaching the course</td>
<td>4.8</td>
<td>0.16</td>
<td>8</td>
<td>4.4</td>
<td>0.08</td>
<td>39</td>
</tr>
<tr>
<td>5. The instructor was prepared for class</td>
<td>4.6</td>
<td>0.18</td>
<td>8</td>
<td>4.3</td>
<td>0.10</td>
<td>39</td>
</tr>
<tr>
<td>6. The instructor gave useful feedback</td>
<td>4.8</td>
<td>0.16</td>
<td>8</td>
<td>4.1</td>
<td>0.11</td>
<td>40</td>
</tr>
<tr>
<td>7. The instructor consistently treated students with respect</td>
<td>4.8</td>
<td>0.16</td>
<td>8</td>
<td>4.5</td>
<td>0.14</td>
<td>39</td>
</tr>
<tr>
<td>8. Overall, the instructor was an effective teacher</td>
<td>4.8</td>
<td>0.16</td>
<td>8</td>
<td>4.1</td>
<td>0.11</td>
<td>40</td>
</tr>
<tr>
<td>9. The course materials were valuable aids to learning</td>
<td>4.4</td>
<td>0.26</td>
<td>8</td>
<td>4.2</td>
<td>0.12</td>
<td>40</td>
</tr>
<tr>
<td>10. The course assignments were valuable aids to learning</td>
<td>4.8</td>
<td>0.16</td>
<td>8</td>
<td>4.3</td>
<td>0.13</td>
<td>40</td>
</tr>
<tr>
<td>11. This course improved my knowledge of the subject</td>
<td>4.6</td>
<td>0.18</td>
<td>8</td>
<td>4.3</td>
<td>0.11</td>
<td>40</td>
</tr>
<tr>
<td>12. Overall, this course was excellent</td>
<td>4.8</td>
<td>0.16</td>
<td>8</td>
<td>4.1</td>
<td>0.12</td>
<td>40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Term</th>
<th>Sprg</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>2015</td>
<td>2014</td>
</tr>
<tr>
<td>Course</td>
<td>CSC 510 001</td>
<td>CSC 791 001</td>
</tr>
<tr>
<td>Courses</td>
<td>Title</td>
<td>Responses</td>
</tr>
<tr>
<td></td>
<td>Software Engineering</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Advanced Topics in</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Response Rate</td>
<td>78.13%</td>
</tr>
<tr>
<td></td>
<td>80.00%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Mea</th>
<th>SEM</th>
<th>N</th>
<th>Dept Mea</th>
<th>SEM</th>
<th>Dept</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teaching aligned with the courses learning objectives/outcomes</td>
<td>4.2</td>
<td>0.12</td>
<td>25</td>
<td>4.4</td>
<td>0.25</td>
<td>4</td>
</tr>
<tr>
<td>2. The instructor was receptive to students outside the classroom</td>
<td>4.6</td>
<td>0.10</td>
<td>25</td>
<td>4.3</td>
<td>0.00</td>
<td>4</td>
</tr>
<tr>
<td>3. The instructor explained material well</td>
<td>4.2</td>
<td>0.25</td>
<td>25</td>
<td>4.3</td>
<td>0.50</td>
<td>0.00</td>
</tr>
<tr>
<td>4. The instructor was enthusiastic about teaching the course</td>
<td>4.8</td>
<td>0.08</td>
<td>25</td>
<td>4.5</td>
<td>0.00</td>
<td>4</td>
</tr>
<tr>
<td>5. The instructor was prepared for class</td>
<td>4.4</td>
<td>0.13</td>
<td>25</td>
<td>4.4</td>
<td>0.50</td>
<td>0.00</td>
</tr>
<tr>
<td>6. The instructor gave useful feedback</td>
<td>4.4</td>
<td>0.13</td>
<td>25</td>
<td>4.2</td>
<td>0.50</td>
<td>0.00</td>
</tr>
<tr>
<td>7. The instructor consistently treated students with respect</td>
<td>4.6</td>
<td>0.17</td>
<td>25</td>
<td>4.5</td>
<td>0.50</td>
<td>0.00</td>
</tr>
<tr>
<td>8. Overall, the instructor was an effective teacher</td>
<td>4.4</td>
<td>0.13</td>
<td>25</td>
<td>4.3</td>
<td>0.50</td>
<td>0.00</td>
</tr>
<tr>
<td>9. The course materials were valuable aids to learning</td>
<td>4.2</td>
<td>0.15</td>
<td>25</td>
<td>4.2</td>
<td>0.50</td>
<td>0.00</td>
</tr>
<tr>
<td>10. The course assignments were valuable aids to learning</td>
<td>4.1</td>
<td>0.15</td>
<td>25</td>
<td>4.3</td>
<td>0.50</td>
<td>0.00</td>
</tr>
<tr>
<td>11. This course improved my knowledge of the subject</td>
<td>4.3</td>
<td>0.14</td>
<td>25</td>
<td>4.4</td>
<td>0.50</td>
<td>0.00</td>
</tr>
<tr>
<td>12. Overall, this course was excellent</td>
<td>4.3</td>
<td>0.14</td>
<td>25</td>
<td>4.2</td>
<td>0.50</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Student comments:

- **CSC510 (Fall 2019):**
  - Makes us understand (concepts) in depth. He is very receptive outside the class and very respectable. One of the best professor's I have met during college. … Dr Tim is awesome!… The greatest professor in Computer Science during my time at NC State. Is very fun to see in the class …. His passion comes through in every aspect of the class, and he's a great instructor. … You're not punished for learning at a slower pace or for being unable to complete one week's homework when it's initially due. I think assignments like these are how almost every course should treat assignments…. He cared about us learning rather than just doing the usual "learn enough to get marks"…. The homework assignments were more less crash course for python and debugging tasks which involved converting written code from 1 language to the other.

- **CSC417 (Spring 2019):**
  - (Note from Dr Menzies: The subject is improving. The feedback below (both positive and negative) will guide further improvements for 2020.)
  - **POSITIVE:** Great hands on work with languages. ….The professor is clearly very knowledgeable and enthusiastic about this material, and I like him a lot. …. Strength: Teacher knew what he was talking about. He had powerful examples. He gave work that he thought would be helpful Weakness: The work given was so abstract that it was hard to understand everything that was happening. … Dr. Menzies clearly is passionate about programming language . I liked how lectures were structured and the material that was discussed during the lecture. Always available for students ….. The large end projects were very fun. I liked having small projects in the beginning that were directed to a specific language, which forced us to learn Lisp and Smalltalk, then we got to choose what to do for the final project. … It was good to have modularity so we could test the output of our selected program….  
  - **NEGATIVE:** His way of programming and giving assignments is so arbitrary it was hard to understand and follow…. I would never take this course again or anything like it if taught by the same professor but I am glad that I took this course. I did like how the final project was structured as well: choose your language, choose your patterns, choose which section of the pipeline. Change the order of what is introduced to ease students into your expectations with things they should have knowledge about. … Simpler assignments, clearer instructions, more coherent lectures.

- **CSC510 (Fall 2018):**
  - Dr. Menzies's class is very interesting. Overall, fantastic pace of the course and materials covered. … Overall, a fantastic course. … Dr. Menzies is the most engaging lecturer I have had to date. He brings levity in his lectures. … Formed his lessons around easy to understand narratives and intuition. …. I feel that the course does a good job of instilling a healthy, scientific scepticism when evaluating AI, and imparts tools with which to evaluate AI. …. My suggestion would be to add a homework where folks set up a small experiment to learn how to build a pipeline that has validation and produces evaluation metrics.

- **CSC 495 (Spring 2018):**
  - (Note from Dr Menzies: The scores for this subject were low. Reason: this was the first undergrad subject I had taught since 2014 and I just got too ambitious. I’m teaching the subject in Spring 2019 and this time I am doing much smaller, much more defined, assignments).
  - He loves the course, is enthusiastic about it, and knows a ton about it, but he needs to slow down and collect the amazing thoughts in his head because he has trouble conveying them clearly. … I learned a lot about a variety of different programming languages which has broadened my view of Computer Science in general. The set up of the course itself was disorganized. I think this is partly the fault of the professor for not setting up a comprehensive syllabus, but also because this was a brand new class this semester. … He is enthusiastic about teaching, but I feel he didn't achieve the goals of the course to me. …. Tim is incredibly enthusiastic about the course, but he can't coherently assemble his thoughts to get out a good lecture. It's so obvious that he knows so much and has so many great ideas, but he just rambles for most of the lecture. If he really organized one topic per lecture and created a coherent "story-line", it'd be sooo much better. … The materials were similar to his lectures - a non-focused stream of thoughts and examples. Smaller and more focused examples would have made a huge difference. Doing a github for the course was wonderful, but the materials inside could've been cleaned up a lot. … Most of the examples are so abstract and Dr. Menzies jumps from one thing to another so quickly it can be very easy to get lost. … I think the due dates should have been more rigid so we don't have assignments due on exam week. … the project assignment itself was
also lacking in detail. This made it very difficult to provide the type of result that the professor was looking for.

- **CSC 510 (Spring 2018):**
  - It was a fun, intuitive class. Did not expect SE to be this fun. … Good course structure, having two projects really enforce the practical aspect of theory explained in the course … The course has two projects which are intensive and call for the application of the concepts studied in the course. The first project is the one which we developed from scratch. And the second project is the one which is developed by some other team but is made feature-rich or modified positively by another. It’s a great concept. This way students get an opportunity of learning how other people have implemented a certain thing and how they add on to it. … Strength: shares industrial experiences which is very helpful … It was fun attending his lectures. … The instructor was pretty enthusiastic and taught with a lot of energy. The lectures were interesting and exciting. … The professor explains a lot about the related things happening in the world … SE course is too broad. Prof Menzies tries his best to teach the class the way of industry. … Strengths - "Very knowledgeable" and he knows it. Weaknesses - Very knowledgeable and "he knows it".

- **CSC 591-023 (2017):**
  - So much enthusiasm OMG!! That is what students need to see in a professor. If it would not have been for his enthusiasm we would not have done our project so well. It just feels good to be in his class. Perfect presentation skills! Glad I took the course. … One of the rare and best course at NC State for data science. Everyone must take it!!! Make it compulsory of Data Science track. … This course was amazing, I learned many things from the lectures and the core concept of the subject was very through and with so many hands on experiments we learned the subject very well. … This course had everything in perfect order, the core basics, experiment with real lift examples, latest most advanced topics to oldest most reliable ones. With the lectures on different papers I learned what are different research topics that is being performed in the industry. ’This course was very thorough and well planned. The lectures were really enjoyable. And the homeworks were really good and we can learn a lot from them. … ’Very passionate about the material he teaches.’ … Prof. Menzies's classes are very interesting and engaging'

- **CSC 510 (2017):**
  - Treats students with respect, very enthusiastic about teaching the course. … The instructor is so knowledgeable. He can extend the talk to a lot of things related. Haven’t seen any other professor so enthusiastic about the subject. Sometimes I feel hard to follow. … immense knowledge about the subject. He is very enthusiastic; creates a light hearted mood in the classroom and encourages student participation. … don't know any other instructor, younger or older, who is as enthusiastic, optimistic and excited about their course. Helps to update oneself to how software is being designed, coded and tested in outside work. Needs, more concentration on coding/projects (including designing and testing/mocking) and how to tackle the problems (faced during software development cycle) - rather than theory. … At times, there is too much theory. … I thought the focus on research didn't really make sense for this course. … but often he will go off on a tangent, pulling up dense (in terms of content and newness to students) research papers of his own and talk about them at great length.

- **Dec 2017, I received the “Letter of Gratitude” show at right from one of my graduate subject’s attendees.**

- **Prof. Warwick Arden (Provost) mailed me on March 16 2016 saying that some students had used the “Thank a Professor” website to comment favorable on my teaching:**
  - He writes “You efforts with these students area reflection of your dedication to teaching and learning. I congratulate you on this recognition and offer by sincere appreciate for your work with students at NCSU.
  - Student comments included “I compare you to an owl because you have a deep connection with wisdom and intuitive knowledge. You have been kind and patient with me and your students. Thank you for everything.”
• **CSC591-006 (2016):**
  - Great teaching! … Great prof! … Course taught well. The best lecturer I've had at NC State with Samitova as a close second. … Understood the material well enough to talk off the cuff which means it stayed interesting and well paced. Good interaction with students, always get quick and useful feedback…. Good training of data science and programming.…. Knowledgeable and passionate in teaching…. The course laid a very good foundation of data science and how practice it as software scientists, the reading assignments (although not easy) taught me how to analyze a research paper… The course was excellent.

• **CSC591-007 (2016):**
  - Amazing course structure. Some of the concepts were used in my job interviews… What an enthusiastic professor. So funny and makes the class so interesting… Good homeworks and projects. Good materials…. He is amazing and has a lot of knowledge. He is passionate about what he teaches and that's why it makes the class interesting as well. Learnt a lot from him….. He is really passionate about the things he teaches and is a very congenial teacher…. Very passionate about the subject which made me excited to learn ASE… It was an amazing course. What I studied in this course, I could not have learned otherwise. I have not seen another professor as enthusiastic as Dr. Menzies in teaching a class. Plus, he never lets you feel bored in class. Each and every concept I learned were new for me; which made this class different from other classes and challenging as well…. Very enthusiastic about the material and I loved having the whole course on Github. More instructors should do this. Workshops were also very beneficial more of those please… Professor is very passionate about the subject and is very keen to share what this field has to offer for computer scientists. …: Almost all the concepts learned in this course were new to me and I guess most other students. This is great knowledge that can be applied in any domain of computer science. Professor and TAs are very helpful with doubts. …

• **CSC510 (2016):**
  - Awesome professor. …Nice and kind… Brilliant core course. Fun to learn with Dr Menzies. Must take for anyone aiming to be a Software Engineer. … Good teaching skills. Enthusiastic about the course…. Brought a lot of energy to the class, and made the subject really interesting! Really liked the short language demos… Would recommend this course to anyone who asks! Wish I'd taken it last year, so I could have done some of the other course taught by Dr. Menzies….. I really loved this class because of the teaching style Dr Tim adopted, he teaches by giving these anecdotes and relating everything being taught with his real world experience. It's a joy to attend his classes and learn from him. Professor treated everyone with equality and took great care in making his students aware of how gender bias impact the CS world today and should be broken. He sets an example and also shows mirror to the students who are consciously/unconsciously suffering from the gender bias issues. I really want to praise and thank him for doing that. … The instructor is enthusiastic and knowledgeable. He can explains course concepts clearly and give concrete examples in real life. After class, the instructor also happy to answer students’ questions and give very useful feedback. … After taking a really mediocre SE course in my undergrad (not at state), I had high hopes for a graduate level SE course and this definitely did not disappoint! Great instructor that made you want to come to class, with an interesting lecturing style that made me want to engage with the material…. Dr Menzies puts everyone at ease in his classes with his sense of humor. Wonderful teacher with tremendous insight and knowledge. Kept a theoretical subject like SE always interesting with good anecdotes, examples and "What did we discuss in the last class?". Liked his discussion based style of teaching…. The course is well designed, the project gives a good look-in into SE practice.

• **CSC510 (2015):**
  - Enthusiastic, Very passionate … Dr. Menzies is a fantastic teacher. He loves research work and hard-working. … Excellent teacher with a flair for creating interests in students …. instructors shares his own experience which is valuable for students and gives pretty god idea who software industry works. …. Assignments were good and helped in learning. … Tim is a very good professor, whose class is full of fun. He always told something new to us. … Awesome professor … Amazing professor. His enthusiasm for the subject could be felt. … Amazing professor. His enthusiasm for the subject could be felt.

• **Csc591/791 (2014):**
  - Dr. Menzies is overall an incredibly reasonable instructor that presents material in a way that students can understand it and his expectations can be met with adequate effort. Above all his expectations are well explained at the outset of the course and if you want to be successful in the class you can be successful. ….Professor Menzies was enthusiastic, humorous, and communicated well. He used helpful visualizations, often an upside-down table or contorted elbow, as an analogue for difficult concepts…. I think the instructor is quite enthusiastic and energetic. He makes the class very much interactive…. Very enthusiastic and very intelligent. Conveys the ideas well and uses "perfect" examples …. Using the right example can save a lot
of time which can be used to do more. Course was really good. Content was nice and its very relevant too. Further professor had recommended a book to follow for those who had not done much in python. He recommended it much before the classes started. I finished the book before the classes started and it helped me to become very comfortable with python as the course started. … brilliant course … The Instructor was well prepared and very enthusiastic…. The Instructor was well prepared and very enthusiastic…. Class is *never* boring; even if I had a hard time following the lectures at times, I walked away with new thoughts each class session…. Dr. Menzies is blunt with feedback but it's never personal….. Definitely the most difficult subject I've taken so far. I learned a lot and would do it again if given the choice….. This is cutting edge stuff and is worth the trouble; it's a very different course from a lot of the current offerings, however, and I would highly recommend for any prospective or current PhD students interested in research.

Also, I have taught the following other courses (at previous universities):
- Agent-oriented programming (2009), Ph.D. graduate subject
- Open Source Software (2007), 4th year undergraduate subject
- Lightweight Software Engineering (2004), 4th year undergraduate subject
- Knowledge engineering (2002, 2003), 4th year undergraduate subject
- Software V&V (2003), Masters course year
- Modelling and analysis of software (2000), 4th year undergraduate subject
- Domain specific languages (2001), graduate class.
- OO software development (1997-98), 4th year undergraduate subject
- Visual programming (1996), 3rd year undergraduate subject
- Software engineering (1996), 3rd year undergraduate subject

B. INSTRUCTIONAL DEVELOPMENT
- New course Foundations of Software Science: At NC State in 2017 I created and taught the new .All lectures and projects were written by me.
- New course Automated Software Engineering: At NC State in 2015 I created and taught a new subject automated software engineering. All lectures and projects were written by me.
- New course Search-based Software Engineering: At NC State in 2014 I created and taught a new subject on search-based software engineering. An updated version of this will be taught in Fall 2015 as Automated (model-based) Software Engineering.
- Programming languages. At West Virginia University in 2009 and 2011 I updated the undergraduate programming language subject to include logic programming and functional programming.
- Data mining: At West Virginia University in 2002, I created and taught a graduate subject on this topic. This subject was extensively revised each year 2003 to 2013.
- Agent-oriented programming: At West Virginia University in 2009, I created and taught a graduate subject on this topic.
- Knowledge engineering: At West Virginia University in 2002, I created and taught a graduate subject on this topic.
- Domain specific languages. At the University of British Columbia in 2001, I created and taught a graduate subject on this topic.
- Visual programming languages. At Monash University in 1996, I created and taught a graduate subject on this topic.
- Research methods. At Monash University in 1995, I created a subject on graduate research methods.
C. MENTORING ACTIVITIES

- Working with my SE faculty colleagues, developed a successful NSF Research Experience for Undergraduates grant for “Science of Software”, 2016-2018.
- Mentor for
  - Assistant professor Tom Price
  - Associate professor Khaled Harfoush
  - Associate professor Sarah Heckman
  - Assistant professor Bradley Reaves

D. MASTERS AND DOCTORAL THESES DIRECTED

I am or was chair or co-chair of the advisory committee for the following research students by thesis (students who have graduated= 7 PhD + 279MS):

Student working towards a degree (12 PhD):
1. Dylan Wilson
2. Rahul Yedida
3. Kewen Peng
4. Zhe Yu (passed, oral prelim, Dec 2018)
5. Tianpei (Patrick) Xia
6. Huy (Ken) Tu
7. Suvo deep Majumder
8. Joymallya Chakraborty
9. Rui Shu
10. Fahmid Fahid
11. Shrikanth Chandrasekaran
12. Xueqi (Sherry) Yang

Completed Ph.D.:

1. Rahul Krishna (2019, Learning Actionable Analytics in Software Engineering)
8. Fayola Peters Ph.D. (2014, WVU) Privacy and Data Sharing

Completed Masters(*):

1. FNU Vivek, MS, NC State, 2019
2. Akshay Nalwaya MS, NC State, 2019
3. Sushma Ravichandran, MS, NC State, 2018
4. George Mathew, MS, NC State, 2016
5. Rahul Krishna, MS, NC State, 2016
6. Divya Ganesan MS (2015, WVU) Exploring Essential Content of Defect Prediction and Effort Estimation through Data Reduction
7. Naveen Kimar, WVU, 2014
14. Fayola Peters MS (2010, WVU) CLIFF: finding prototypes for nearest neighbor algorithms with applications
15. Andrew Matheny MS (2010, WVU) Trade-offs of heuristic vs. rigorous algorithms in text mining
16. Joe D’Alessandro MS (2010, WVU) Optimized trusted information sharing
17. Grey Gay MS (2010, WVU) The robust optimization of non-linear requirements models
18. Adam Nelson MS (2010, WVU) OURMINE: an open source data mining toolkit
23. Justin DiStefano MS (2008, WVU) Building better software: the applicability of a professional tool for automation
24. Daniel Baker MS (2007, WVU) Hybrid approach to expert and model based effort estimation
25. Donald Boland MS (2007, WVU) Data discretization simplified: randomized binary search trees for data preprocessing
27. Ryan Clark MS (2005, Portland State) Optimizing Treatment Learning
29. Yi Hu MS (2003, University British Columbia) Treatment learning
31. David Owen MS (2002, WVU) Combining complementary formal verification strategies to improve performance and accuracy
32. John Powell MS (2001, WVU) Graph theoretic approach to assessing tradeoffs on memory usage for model checking
III. SCHOLARSHIP IN THE REALMS OF FACULTY RESPONSIBILITY

A. SCHOLARLY ACCOMPLISHMENTS – PUBLICATIONS

Invited and Contributed Research Presentations

1. Tutorial, LASER summer school on SE (Italy)
2. Keynote, ICSE 2019 SEIP
3. One journal first presentations, ICSE’19
4. Two journal first presentations FSE’19
5. Invited Talk, CodeFreeze19, Minnesota, 2019
6. Invited keynote, Foundations of SE, Florida, 2018
7. Invited keynote, ICSE RAISE workshop, Realizing AI+SE synergies, May 2018
8. Invited Keynote, Inaugural MSR award, MSR’17
11. Keynote NSF PI meeting on sustainable development, Feb 2017 http://tiny.cc/nsf17
14. Invited Talk, Naval Research Lab, May 2018
15. Invited Talk, Lexis Nexis Cognitive Summit, August 2018
16. Invited Talk, Monash University Dean’s series, Australia, July 2017
17. Invited Talk, IBM Technical Interchange Conferences, November 2017
20. Invited speaker, Lexis Nexis industry day, August 2016 http://tiny.cc/timm9

21. Journal-First presentation, FSE’17 Are Delayed Issues Harder to Resolve?
22. Journal-First presentation, FSE’15 Geometric Active Learning

23. Tutorial, ICSE’16: How Not to do it: Anti-patterns in data science

Refereed Journal and Top Magazine Publications

4. Junjie Wang; Song Wang; Jianfeng Chen; Tim Menzies; Qiang Cui; Miao Xie; Qing Wang, Characterizing Crowds to Better Optimize Worker Recommendation in Crowdsourced Testing, IEEE Transactions on SE, to appear, 2019
9. Vivek Nair, Zhe Yu, Tim Menzies, Norbert Siegmund, Sven Apel, Finding Faster Configurations using FLASH, IEEE Transactions on SE, 2018
11. M Choetkietikul, HK Dam, T Tran, TTM Pham, A Ghose, T Menzies, A deep learning model for estimating story points. IEEE Transactions on Software Engineering
15. J Nam, W Fu, S Kim, T Menzies, L Tan, Heterogeneous defect prediction, IEEE Transactions on Software Engineering, June 2017

Books/Book Chapters

2. Perspectives on Data Science for Software Engineering, T. Menzies, L. Williams, T. Zimmermann, Morgan Kaufmann, 2016
4. Sharing Data and Models in Software Engineering, T. Menzies, Ekrem Kocaguneli, L. Minku, F. Peters, B. Turhan,
Refereed Conference Publications

1. Tim Menzies: Take control: on the unreasonable effectiveness of software analytics. ICSE (SEIP) 2019: 265-266
6. Amritanshu Agrawal, Tim Menzies: Is "better data" better than "better data miners"?: on the benefits of tuning SMOTE for defect prediction. ICSE 2018: 1050-1061
8. Amritanshu Agrawal, Akond Rahman, Rahul Krishna, Alexander Sobran, Tim Menzies: We don't need another hero?: the impact of "heroes" on software development. ICSE (SEIP) 2018: 245-253
10. Suvodeep Majumder, Nikhila Balaji, Katie Brey, Wei Fu, Tim Menzies: 500+ times faster than deep learning: a case study exploring faster methods for text mining stackoverflow. MSR 2018: 554-563
We Fu, Tim Menzies: Easy over hard: a case study on deep learning. ESEC/SIGSOFT FSE 2017: 49-60
16. Wei Fu, Tim Menzies: Revisiting unsupervised learning for defect prediction. ESEC/SIGSOFT FSE 2017: 72-83
17. Vivek Nair, Tim Menzies, Norbert Siegmund, Sven Apel: Using bad learners to find good configurations. ESEC/SIGSOFT FSE 2017: 257-267
23. Lucas Layman, Allen Nikora, Joshua Meek, Tim Menzies, Topic Modeling NASA Space System Problem Reports (research in Practice Track), MSR’16 (27% acceptance rate for full papers)
25. Scalable product line configuration: A straw to break the camel's back, ASE , 2013 , AS Sayyad, J Ingram, T Menzies, H Ammar
27. Class level fault prediction using software clustering, G Scannillo, C Gravino, A Marcus, T Menzies, ASE 2013
29. Tim Menzies: Beyond data mining; towards "idea engineering". PROMISE 2013: 11Learning from open-source projects: An empirical study on defect prediction, Z He, F Peters, T Menzies, Y Yang, ESEM 2013
31. Beyond data mining; towards idea engineering T Menzies, PROMISE 2013
33. Fayola Peters, Tim Menzies: Privacy and utility for defect prediction: Experiments with MORPH. ICSE 2012: 189-199
34. Yang Sok Kim, Byeong Ho Kang, Seung Hwan Ryu, Paul Compton, Soyeon Caren Han, Tim Menzies: Crowd-Sourced Knowledge Bases. PKAW 2012: 258-271
35. Raymond Borges, Tim Menzies: Learning to change projects. PROMISE 2012: 11-18


High Impact, Non-Refereed Publications


Other Publications (workshops, etc)

4. Learning the task management space of an aircraft approach model, AAAI 2014 Spring Symposium, Joseph Krall, Tim Menzies, Misty Davis.

25


54. T.J. Menzies and P. Compton. The (extensive) implications of evaluation on the development of knowledge-based systems.
65. T.J. Menzies. Concerning the user of procedural construct as a knowledge acquisition technique. In IJCAI '91 Knowledge Acquisition Workshop, 1991.
B. RESEARCH FUNDING

New for this year: $2,945K

Accepted:

- NSF Mega-Transfer $499K
- NSF Workforce Empowerment $950K
- NSF Empirical SE for Computational Science $592K
- NSF Science of Vulnerability Detection $499K
- DARPA Sail-on v&v ai 70,000
- LAS (NSA) Fairness is a choice $164K
- Lexis Nexis Leverage (year2) $120K (gift)
- Facebook Good via construction $50K (gift)
<table>
<thead>
<tr>
<th>start year</th>
<th>finish year</th>
<th>Funding body</th>
<th>Name</th>
<th>gift A</th>
<th>B</th>
<th>C = A + B</th>
<th>D</th>
<th>E=C+D</th>
<th>current?</th>
<th>grand total (as of 3/1/2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>2022</td>
<td>NSF</td>
<td>Mega-Transfer</td>
<td>$439,372</td>
<td>$509,372</td>
<td>yes</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>2020</td>
<td>Darpa</td>
<td>self-coyk at</td>
<td>$630,000</td>
<td>$700,000</td>
<td>yes</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>2020</td>
<td>LNS (NSF)</td>
<td>fairness is a choice</td>
<td>$64,000</td>
<td>$164,000</td>
<td>yes</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>2020</td>
<td>NSF</td>
<td>Workforce Improvement</td>
<td>$90,000</td>
<td>$950,000</td>
<td>yes</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>2020</td>
<td>LNS (NSF)</td>
<td>Leverage (year 2)</td>
<td>$320,000</td>
<td>$1,200,000</td>
<td>yes</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>2020</td>
<td>Facebook</td>
<td>Good via construction</td>
<td>$60,000</td>
<td>$90,000</td>
<td>yes</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>2020</td>
<td>NSF</td>
<td>Empirical SR for Computational Science</td>
<td>$592,249</td>
<td>$592,249</td>
<td>yes</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>2020</td>
<td>NSF</td>
<td>Science of Vulnerability Detection</td>
<td>240,000</td>
<td>240,000</td>
<td>yes</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2018 2018  | Lewis Navi (Atlanta) | Early recognition | y | $40,000 | $40,000 | $40,000 | yes | yes |
| 2018       | IBM          | Analytics SE faculty award | y | $40,000 | $40,000 | $40,000 | yes | yes |
| 2019       | LNS (NSF)    | How safe is this conclusion | y | $20,000 | $20,000 | $20,000 | yes | yes |
| 2019       | Lewis Navi (Raleigh) | configure cloud + test cases | y | $110,000 | $110,000 | $110,000 | yes | yes |
| 2019       | NSF          | Empirical SR for Computational Science | $124,000 | $124,000 | yes | yes |
| 2018       | LNS (NSF)    | How to make a magneon | y | $55,000 | $55,000 | $55,000 | yes | yes |
| 2017       | NSF          | Automated | | $450,000 | $450,000 | $450,000 | yes | yes |
| 2017       | IBM          | Automated SE Faculty grant | y | $40,000 | $40,000 | $40,000 | yes | yes |
| 2015       | Lewis Navi (Raleigh) | Validation lab | y | $20,000 | $20,000 | $20,000 | yes | yes |
| 2017       | Lewis Navi (Atlanta) | The agreement machine | y | $35,000 | $35,000 | $35,000 | yes | yes |
| 2017       | LNS (NSF)    | Privatized data sharing | y | $40,000 | $40,000 | $40,000 | yes | yes |
| 2016       |IBM          | Automated SE faculty grant | y | $40,000 | $40,000 | $40,000 | yes | yes |
| 2016       | NSF          | New Science of Software | y | $10,000 | $355,363 | $355,363 | yes | yes |
| 2016       | LNS (NSF)    | Optimization of ML for Big Data | y | $50,000 | $50,000 | $50,000 | yes | yes |
| 2016       | SEI          | Optimization of business processes | y | $75,000 | $75,000 | $75,000 | yes | yes |
| 2015       | NCSA        | Smart Care  | $60,000 | $60,000 | $60,000 | yes | yes |
| 2015       | Lewis Navi (Raleigh) | Validation | y | $20,000 | $20,000 | $20,000 | yes | yes |
| 2015       | JPL          | Effort Estimation | | $30,000 | $30,000 | $30,000 | yes | yes |
| 2015       | Lewis Navi (Raleigh) | Scripting for Big data | y | $50,000 | $50,000 | $50,000 | yes | yes |
| 2013       | NSF          | Transfer Learning in SE | | 622,030 | 622,030 | $25,771 | yes | yes |
| 2013       | NASA (JPL)  | JPL Effort estimation | $47,000 | $47,000 | $47,000 | yes | yes |
| 2012       | USDA        | Early Childhood Obesity Program | $135,526 | $135,526 | $135,526 | yes | yes |
| 2012       | NSF          | New directions in AI and SE | | $95,000 | $95,000 | $95,000 | yes | yes |
| 2012       | DoD STTR    | Active Learning | | $280,534 | $280,534 | $280,534 | yes | yes |
| 2014       | NSF (NSF)   | Better Understanding of SE data | | $249,900 | $249,900 | $249,900 | yes | yes |
| 2012       | Qatar Research | Center of Excellence in SE | | $186,250 | $186,250 | $186,250 | yes | yes |
| 2011       | CITER       | Border Crossing | $70,000 | $70,000 | $70,000 | yes | yes |
| 2001       | National Forecasts | Overcoming Badness | | $55,721 | $55,721 | $55,721 | yes | yes |
| 2001       | National Archives | STEP Research | | $209,000 | $209,000 | $248,000 | yes | yes |
| 2008       | National archives | STEP research | | $371,500 | $371,500 | $371,500 | yes | yes |
| 2008       | NSF (NSF)   | Automatic Quality Assessment | | $280,000 | $280,000 | $280,000 | yes | yes |
| 2008       | National Forecasts | Calculus | | $30,000 | $30,000 | $30,000 | yes | yes |
| 2008       | NASA        | Understanding Azaalin | | $65,000 | $65,000 | $65,000 | yes | yes |
| 2008       | NASA        | Crystal Ball | | $53,000 | $53,000 | $53,000 | yes | yes |
| 2008       | NASA        | Advanced UML, modeling | | $50,000 | $50,000 | $50,000 | yes | yes |
| 2008       | NASA        | Applied Technology Lab | | $95,551 | $95,551 | $95,551 | yes | yes |
| 2008       | NASA        | Next generation metrics phase 1 | | $40,715 | $40,715 | $40,715 | yes | yes |
| 2007       | NASA        | WVU Linsum | $95,007 | $95,007 | $95,007 | yes | yes |
| 2007       | Prototype | Analyse metric, (Galaxy Global) | $35,000 | $35,000 | $35,000 | yes | yes |
| 2007       | National archives | STEP research | | $15,482 | $15,482 | $15,482 | yes | yes |
| 2007       | NASA        | Learning software process model | | $313,255 | $313,255 | $313,255 | yes | yes |
| 2007       | NASA        | Improving IT & Techniques | $107,990 | $107,990 | $107,990 | yes | yes |
| 2007       | NASA        | co-op agreement supplemental funds | | $78,231 | $78,231 | $78,231 | yes | yes |
| 2006       | NASA        | co-op funds for Pulland Hall Lab | $30,000 | $30,000 | $30,000 | yes | yes |

Total (Grand): $1,849,962 | $1,849,962 | $1,849,962 | $1,849,962 | $1,849,962

Total (ALL): $3,000,723 | $3,000,723 | $3,000,723 | $3,000,723 | $3,000,723
<table>
<thead>
<tr>
<th>Year</th>
<th>Project Description</th>
<th>Team Members</th>
<th>Discipline</th>
<th>Funding Source</th>
<th>Amount</th>
<th>Start Date</th>
<th>End Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-0916</td>
<td>Provide Support in Developing Cost estimating models for the NASA Software CER Development Task</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>Jet Propulsion Laboratory (Prime - National Aeronautics &amp; Space Administration (NASA))</td>
<td>$28,500</td>
<td>04/10/2015 through 01/31/2016</td>
<td></td>
</tr>
<tr>
<td>2015-0943</td>
<td>SHF: Medium: Collaborative Transfer Learning in Software Engineering</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$464,609</td>
<td>08/02/2014 through 06/30/2018</td>
<td></td>
</tr>
<tr>
<td>2015-3234</td>
<td>Share, Care, Beware: Trusted Sharing Practices for Data Science</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>North Carolina Data Science and Analytics Initiative (NCDSA)</td>
<td>$73,225</td>
<td>07/01/2016 through 06/30/2017</td>
<td></td>
</tr>
<tr>
<td>2016-0911</td>
<td>Enabling Evidence-Based Modernization</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>Carnegie Mellon University (Prime - US Air Force (USAF))</td>
<td>$70,000</td>
<td>01/13/2016 through 10/31/2016</td>
<td></td>
</tr>
<tr>
<td>2016-1412</td>
<td>REU Site: Science of Software</td>
<td>Farin, Christopher Joseph Menzies, Timothy James, Heckman, Sarah Smith, Murphy-Hill, Emerson R</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$355,365</td>
<td>02/01/2016 through 01/31/2020</td>
<td></td>
</tr>
<tr>
<td>2017-1060</td>
<td>SHF: Medium: Scalable Holistic Autotuning for Software Analytics</td>
<td>Menzies, Timothy James, Shen, Xipeng</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$898,349</td>
<td>07/01/2017 through 06/30/2021</td>
<td></td>
</tr>
<tr>
<td>2018-1797</td>
<td>EAGER: Empirical Software ENGINEERING for Computational Science</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$124,628</td>
<td>05/01/2018 through 07/31/2019</td>
<td></td>
</tr>
<tr>
<td>2019-1209</td>
<td>SHF: Small: Mega Transfer: On the Value of Learning from 10,000+ Software Projects</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$472,024</td>
<td>10/01/2019 through 09/30/2022</td>
<td></td>
</tr>
<tr>
<td>2019-1222</td>
<td>SHF: Small: Detecting the 1%: Growing the Science of Vulnerability Detection</td>
<td>Williams, Laurie A, Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$499,998</td>
<td>10/01/2019 through 09/30/2022</td>
<td></td>
</tr>
<tr>
<td>2019-2487</td>
<td>Elements: Can Empirical SE be Adapted to Computational Science?</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$592,129</td>
<td>10/01/2019 through 09/30/2022</td>
<td></td>
</tr>
<tr>
<td>2019-2990</td>
<td>Convergence Accelerator Phase I (RAISE): Developing Intelligent Tech. for Workforce Empowerment: Credential Gap Diagnostics and Personalized Recommenders for Jobs and Retraining</td>
<td>Menzies, Timothy James, Ding, Huiling Chi, Min Shen, Xipeng, Fang, Xiaolei</td>
<td>English</td>
<td>National Science Foundation (NSF)</td>
<td>$985,485</td>
<td>09/01/2019 through 05/31/2020</td>
<td></td>
</tr>
</tbody>
</table>

Total external funding: $4,564,312
## Internal Funding

<table>
<thead>
<tr>
<th>Grant Year</th>
<th>Project Title</th>
<th>Principal Investigator(s)</th>
<th>Department</th>
<th>Funding Source</th>
<th>Total Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017-1422</td>
<td>LAS DO7 Menzies - 3.4 Cybersecurity Second Order Effects</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>Laboratory for Analytic Sciences</td>
<td>$186,809</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>01/01/2017 through 12/31/2018</td>
<td></td>
</tr>
<tr>
<td>2019-1060</td>
<td>LAS DO1 Menzies - 2.4 Analytics, AI and Machine Learning</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>Laboratory for Analytic Sciences</td>
<td>$181,110</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>01/17/2019 through 12/31/2020</td>
<td></td>
</tr>
</tbody>
</table>

Total internal funding: $367,919

## Pending Proposals (including pre-proposals)

<table>
<thead>
<tr>
<th>Grant Year</th>
<th>Proposal Title</th>
<th>Principal Investigator(s)</th>
<th>Department</th>
<th>Funding Source</th>
<th>Total Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019-2049</td>
<td>Artificial Intelligence Fighting Against Cyberattacks: Instant Prevention of Software Vulnerabilities</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>University of Wollongong (Prime - Australian Research Council)</td>
<td>$0</td>
</tr>
<tr>
<td>2019-2780</td>
<td>FAI: Fairness is a Choice (and Not Choosing is Unfair)</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$705,216</td>
</tr>
</tbody>
</table>

Total of pending proposals: $777,893

32
<table>
<thead>
<tr>
<th>Year</th>
<th>Proposal ID</th>
<th>Title</th>
<th>Investigators</th>
<th>Department</th>
<th>Funding Agency</th>
<th>Amount ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1051</td>
<td>CI-NEW: Next Generation Open Science Research for Software Engineering</td>
<td>Menzies, Timothy James, Murphy-Hill, Emerson R</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$793,842</td>
</tr>
<tr>
<td>2015</td>
<td>1394</td>
<td>CPS: Synergy: Collaborative Research: Real Time Attack Monitoring and Control for Cyber Physical Security of Power Grid</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$179,151</td>
</tr>
<tr>
<td>2015</td>
<td>1562</td>
<td>SHF: Small: Smarter Software Autotuning for SE Data Analytics</td>
<td>Menzies, Timothy James, Shen, Xipeng</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$498,524</td>
</tr>
<tr>
<td>2015</td>
<td>1565</td>
<td>SHF: Small: Collaborative: Changing Software to Reduce Defects</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$249,594</td>
</tr>
<tr>
<td>2016</td>
<td>0702</td>
<td>SHF: Medium: Holistic Scalable Autotuning for Software Engineer Data Analytics</td>
<td>Menzies, Timothy James, Shen, Xipeng</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>2016</td>
<td>0738</td>
<td>SHF: Medium: Collaborative Research: Changing Software to Reduce Defects</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$740,607</td>
</tr>
<tr>
<td>2016</td>
<td>0934</td>
<td>Verifying Safety of NextGen Models: A Rational Approach</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Aeronautics &amp; Space Administration (NASA)</td>
<td>$0</td>
</tr>
<tr>
<td>2016</td>
<td>1357</td>
<td>TWC: Small: On the Practical Use of Attack Surfaces Find Reachable Code Vulnerabilities</td>
<td>Williams, Laurie A, Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$499,948</td>
</tr>
<tr>
<td>2017</td>
<td>1061</td>
<td>SHF: MEDIUM: Is There Wisdom in the (Qualified) Crowd?</td>
<td>Stolee, Kathryn Thomasset, Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$1,199,261</td>
</tr>
<tr>
<td>2017</td>
<td>1445</td>
<td>S4TC: Core: Small: Are Vulnerability Prediction Models Possible for Practical Use?</td>
<td>Williams, Laurie A, Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$499,486</td>
</tr>
<tr>
<td>2018</td>
<td>0729</td>
<td>SHF: Medium: Better Software Analytics by Combining Human and Artificial Intelligence</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$905,037</td>
</tr>
<tr>
<td>2018</td>
<td>1293</td>
<td>SHF: Small: Jumpstarting Next Generation Vulnerability Prediction Models</td>
<td>Menzies, Timothy James, Williams, Laurie A</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$499,857</td>
</tr>
<tr>
<td>2019</td>
<td>2050</td>
<td>CCRI: Medium: Collaborative Research: SAllT: Bridging the Gap from Research to Practical Advice</td>
<td>Menzies, Timothy James</td>
<td>Computer Science</td>
<td>National Science Foundation (NSF)</td>
<td>$718,159</td>
</tr>
</tbody>
</table>

Total of non-funded proposals: $7,983,466

<table>
<thead>
<tr>
<th>Year</th>
<th>Proposal ID</th>
<th>Title</th>
<th>Investigators</th>
<th>Department</th>
<th>Funding Agency</th>
<th>Amount ($)</th>
</tr>
</thead>
</table>

Miscellaneous Activities

Total miscellaneous activity funding: $0
IV. EXTENSION AND ENGAGEMENT WITH CONSTITUENCIES OUTSIDE THE UNIVERSITY

- Lexis Nexis: test case prioritization, Raleigh campus
- Lexis Nexis: cloud configuration, Raleigh campus
- Lexis Nexis: test case prioritization, Raleigh campus
- IBM, data mining work with research triangle. Faculty award 2017.
- IBM, data mining work with research triangle. Faculty award 2016.
- Lexis Nexis, text mining work, 2015, 2016, 2017
- Jet Propulsion Lab, effort estimation research. 2002 to present. Funded research 2007, 20014 to 2015
- Microsoft Research, research projects, February 2011 to 2012 to present
- NASA, Software Engineering Research Chair, 2001 to 2003
- NASA Effort Estimation research, 2004 to 2015
- Consultant, Object-oriented programming, 1988-1995
V. TECHNOLOGICAL AND MANAGERIAL INNOVATION

A. TECHNOLOGY TRANSFER

Workshop Organizer/Facilitator:
- RAISE pc-chair 2019
- ROSE festival organizer (DSE’18, ICSE’19)
- FSE’18 artifacts chair
- SSBSE co-PC chair, 2017
- FSE SWAN workshop, co-chair, 2017
- Artifacts track, FSE’16
- Artifacts track, ICMSE, 16
- Big Data for SE, ICSE’16 workshop
- Actionable Analytics, ASE’15 workshop
- Big Data for SE, ICSE’15 workshop
- RAISE’14 (Realizing AI Synergies with Software Engineering), an ICSE 2014 workshop/
  Dagstuhl Seminar, Software Development Analytics, 2014
  (co-organized with Laurie Williams and Tom Zimmermann).

Tutorial Presenter/Organizer:
- ICSE 2016 Technical Briefing: How not to do it, Anti-Patterns in Data Analysis.
- ICSE 2014 Tutorial: Art and Science of Analyzing Software data
- ICSE 2013 Tutorial: Data Science for Software Engineering
- June 2010: Data Mining summer school, Queens University, Kingston, Canada (http://goo.gl/oMcSX);
- Feb 2010: Invited speaker, Microsoft, Empirical SE, version 2.0
- Sept 2008: Invited Speaker, Google, Defect Prediction

B. IMPACT

Here is the text of my 2018 IEEE Fellow application (which was successful).

Internationally known for revolutionary advances exploring the synergy between artificial intelligence (AI) and software engineering (SE), Dr. Menzies has authored four books and over 260 refereed publications. His publications, with over 9000 citations, have appeared in leading journals and proceedings of prestigious conferences. He has supervised seven students earning PhDs and 23 MS thesis students. Dr. Menzies' distinctive contributions have had enormous impact for SE researchers and practitioners in software quality prediction and software optimization.

SOFTWARE QUALITY PREDICTION

Because software plays a critical role in industry, government, and society itself, improving software quality is critical. In landmark papers in 2006 and 2007, Dr. Menzies was an early pioneer in applying data mining and AI to software quality predictors, introducing a method which identified software modules likely to contain defects. This method had a 71 percent mean probability of defect detection, significantly higher than the code inspections commonly used in software practice.

In his software quality prediction research, Dr. Menzies identified a serious problem: often, the analysis in SE papers is not reproducible because data underlying the analysis is unavailable. To address this problem, Dr. Menzies developed PROMISE, a public data repository of software data, in 2005 publishing a paper introducing PROMISE and co-founding the PROMISE workshop, so successful it became a conference in 2008. Today, the PROMISE repository contains hundreds of data sets used in thousands of papers by researchers around the world.

OPTIMIZATION OF SOFTWARE-INTENSIVE SYSTEMS

Dr. Menzies is a pioneer in applying data miners to optimize software-intensive systems. In 2002, he discovered that analyzing such systems with data miners augmented with genetic algorithms led to faster analysis and better optimizations. Even for systems with millions of configuration options, Dr. Menzies’ optimizers quickly learn how to make code run quicker, make
web servers handle more traffic, and compile programs faster. Dr. Menzies' optimizers have been applied at NASA for reasoning about safety-critical aerospace software.

Dr. Menzies has also applied his optimization techniques to understand the unstructured textual components of software artifacts and software research papers. His was one of the earliest successful efforts applying text mining and AI to the notes of software test engineers. By identifying anomalous reports that required a second opinion, he could increase assurance of NASA systems while reducing the overall effort required to achieve that assurance. Recently, he has designed tools that can review 10,000s of papers to learn the structure of the SE scientific community. These tools can guide researchers and practitioners to find relevant work that might otherwise be overlooked.

Dr. Menzies' contributions to SE and AI are widely recognized. For his research, in 2017, Dr. Menzies received the MSR (Mining Software Repositories) Foundational Contribution Award as "Recognition of fundamental contributions in the field of data mining software repositories which helped others advance the state of the art." International databases of scholarly achievement rank Dr. Menzies number three world-wide both in software analytics and in SE and data mining. Recently, Dr. Menzies clustered 35,000 papers from the last 25 years of top-SE journals and conferences. In the "software metrics" cluster, Dr. Menzies is the top-ranked author. In the papers from top-ranked venues, Dr. Menzies' h-index of 48 places him number 11 overall.

Dr. Menzies' contributions have had world-wide impact in software practice. In 2005, Turkish researchers found that when commercial teams restricted code inspections to 25 percent of the files identified by Dr. Menzies' methods, they detected 88 percent of the existing code defects. In 2005, his students commercialized his defect detection methods in the Predictive tool suite, subsequently purchased by companies such as Chevron, Northrop Grumman, LogLogic, Inc., and Compagnie Financière Alcatel, to find code defects. In 2017, the US Software Engineering Institute used Dr. Menzies' optimizers to guide discussions about costly updates to Department of Defense software.

NASA has benefited enormously from Dr. Menzies’ research. In 2005, as science chair at a NASA facility, he received a commendation award from NASA’s Chief of Mission Assurance saying: "...A great researcher in his own right, ...Tim has raised the bar on quality and level of work [expected] from our researchers." NASA used his algorithms in 2008 to find violations in Space Shuttle launch requirements; in 2010, to quickly explore the design of next-generation new Air Traffic Management concepts; and in 2017 to find better monitoring strategies for pilots flying planes in safety-critical situations. In 2016, based on Dr. Menzies' research, NASA's Jet Propulsion Laboratory created the NASA Analogy Software Cost Model as its official tool for predicting software development costs.

Evidence of Technical Accomplishment

- Tim Menzies, Jeremy Greenwald, Art Frank, “Data mining static code attributes to learn defect predictors,” IEEE Transactions on Software Engineering, Vol. 33 (1), 2-13, 2007. Dr. Menzies is a pioneer in the development of predictors of software quality learned from data miners. A notable finding of this paper is that Dr. Menzies' methods (including decision trees and Bayesian learning) have a 71 percent mean probability of defect detection—a rate significantly higher than human manual inspections. The paper, with more than 920 Google Scholar citations, is one of the 100 most cited papers in software engineering. Moreover, nine of the 50 most cited papers in the IEEE Transactions on SE (2012-2017) use methods and/or data from the databases used by this paper. Methods for software defect prediction introduced in the paper have been applied commercially around the world. In this paper, Dr. Menzies was the lead researcher—he defined the problem, the technical approach, and designed and coded all of the experiments.
- Martin S. Feather and Tim Menzies, "Converging on the optimal attainment of requirements," Proceedings, IEEE Joint International Conference on Requirements Engineering, 2002. Although optimization methods for numerical systems have been used widely, applying these methods is often ineffective in complex software systems where each "if" statement divides the software into regions with different properties. For software, Dr. Menzies found that applying non-numeric optimizers, e.g., simulated annealing or genetic algorithms, is effective. This paper is the first of its kind to reason about solutions to software requirement problems on the Pareto frontier. As witnessed by many papers in the last two years, this method is now widely used by researchers in the software requirements community. For this paper, Dr. Menzies led the AI-part of the research, and designed and implemented the AI algorithm used in the analysis.
- Tim Menzies, Andrian Marcus, "Automated severity assessment of software defect reports," IEEE International Conference on Software Maintenance," 2008. This paper, with over 185 citations, describes one of the earliest successful efforts applying text mining methods to the notes of software test engineers. The method introduced in the paper identifies anomalous reports requiring a second opinion, thus increasing software quality assurance while
reducing the overall effort required to achieve that assurance. For this work, Dr. Menzies was the lead researcher, defining the overall vision of the paper, as well as building the tools and running all of the experiments.

Natural Language Understanding

- Zhe Yu, Nicholas Kraft, Tim Menzies “Finding Better Active Learners for Faster Literature Reviews”. Empirical SE Journal, to appear 2018. This is the first SE application using incremental text mining methods to learn what a reader wants to read. Dr. Menzies showed that a) supposed state-of-the-art text miners from other domains perform poorly for SE, and b) a new method called FASTREAD can quickly guide researchers and practitioners to relevant work that might otherwise be overlooked. Achieving Generalizability in Software Engineering Research

- Burak Turhan, Tim Menzies, Ayse Basar Bener, Justin S. Di Stefano, "On the relative value of cross-company and within-company data for defect prediction," Empirical SE, vol. 38(6), 1403-1416, 2012. This paper shows that useful models for a project can be built by carefully selecting the most relevant examples from other projects. The paper, with more than 180 citations, is one of the five most cited articles of all time in the Empirical SE journal.

Adjusting Learners to Human Needs

- Abdel Salam Sayyad, Tim Menzies, and Hany Ammar, "On the value of user preferences in search-based software engineering: A case study in software product lines", International Conference on Software Engineering, 2013. This paper (134 citations) shows that while most, but not all, optimizers used in software engineering are highly insensitive to complex sets of user preferences, for complex requirements problems, goal-aware reasoning can achieve much better results than standard optimizers used in software engineering.

- Abdel Salam Sayyad, Joseph Ingram, Tim Menzies, Hany Ammar, "Scalable product line configuration: A straw to break the camel's back". Automated Software Engineering Conference, 2013. This paper (86 citations.), which extends the previous paper, is one of the five most cited papers in the IEEE Automated Software Engineering Conference in the last five years. By exploiting the richness of human preferences, the method introduced in this paper can extract usable designs from a space of thousands of goals and hundreds of thousands of constraints.

Learning Using Many Opinions

- E Kocaguneli, Tim Menzies, JW Keung,"On the value of ensemble effort estimation," IEEE Transactions on Software Engineering, Vol. 38(6), 1403-1416, 2012. Even though ensemble techniques are widely applied in other domains, they are rarely used in SE. This paper (140 citations) showed that any single predictor was less trustworthy than using twelve elite models implemented from an ensemble of 90 learners.

Uncovering Errors in Data Mining

- Tim Menzies, Alex Dekhtyar, Justin Di Stefano, Jeremy Greenwald, "Problems with precision" IEEE Trans SE, 2007. In this paper (155 citations), Dr. Menzies describes a previously undocumented, subtle, and dangerous aspect of precision in a widely-used performance measure. Curiously, this problem had not been previously reported despite the measure's widespread use.

Better Optimizers Using Data Miners

- Tim Menzies, Zach Milton, Burak Turhan, Bojan Cukic, Yue Jiang, Ayse Basar Bener, "Defect prediction from static code features: Current results, limitations, new approaches”. Automated Software Engineering, 2010. This paper (197 citations) introduces "WHICH" a meta-learner framework that can be quickly customized for different business goals. Measured in terms of specific user goals, WHICH performs better that many standard learners. Human-Understandable Data Mining Results

- Tim Menzies, Ying Hu, "Data mining for very busy people", IEEE Computer, Vol. 36(11), 2003. Cognitive scientists and researchers studying human decision-making note that humans often use simple models rather than complex ones. This paper (132 citations) describes Dr. Menzies' TAR2 data miner which generates tiny human-readable models, useful for describing to humans many seemingly complex software engineering problems.
VI. SERVICE TO THE UNIVERSITY AND PROFESSIONAL SOCIETIES

A. UNIVERSITY SERVICE

- Chair, Search committee, SE faculty, 2019
- Member, CSC Graduate Program Oversight Committee. 2016-present
- Member, Strategic Planning Committee, 2016-
- Member, search committees, CSC, 2016
- Worked on the graduate recruiting weekend, March 2017.
- Member, University faculty scholars review committee (Sept 8, 2017).
- Volunteer, Open Day, March 2015
- Speaker, Graduate research seminar series (CS), November ‘14

B. NATIONAL AND INTERNATIONAL SERVICE

- Editorial Board
  - IE Software journal
  - Journal of Software Systems, 2016-
  - Big Data Research, 2016 -present
  - Software Quality Journal, 2016- present
  - Information Software Technology, 2016-present
  - Empirical Software Engineering International Journal, 2009-present
  - Automated Software Engineering journal (2010 – present)
  - Transactions Software Methodologies
- Associate Editor
- General Chair
  - IEEE International Conference Software Maintenance and Evolution, 2016
- Program Chair/Co-Chair:
  - PROMISE 2020 PC-chair
  - IEEE Transactions on Software Engineering, 2011, Lawrence, Kansas
- Steering Committee Member
  - IEEE Automated Software engineering, 2012-
  - PROMISE conference on repeatable experiments in software engineering (2006-2012)
- Doctoral Symposium
  - Chair, IEEE Automated Software engineering, 2011, Lawrence, Kansas
- Research Proposal Panel
- Guest Editor:
  - (2017) IEEE Software, special issue on Actionable Analytics
  - (2016) Automated Software Journal, Best papers RAISE’15
  - (2015) Special issue, best papers from RAISE’13, Automated Software Engineering
  - (2013) Special Issues, Information and Software Technology, Best papers from PROMISE’11, 55(8).
  - (2013): Special Issue, Empirical Software Engineering, Best papers, PROMISE’10, 18(3) 2013

- General chair
  - ICSME’16
  - BigDSE’16, BigBDSE’15

- Senior roles in conference organization:
  ○ Artifacts chair, FSE’18
  ○ Data challenge, RE’18
  ○ PC-chair: SSBSE 2017,
  ○ Co-PC chair FSE SWAN 2017
  ○ Artifacts chair: FSE 2016
  ○ Artifacts chair: ICSME 2016

- Program Committee:
  ○ 2019:
    - IEEE Fellow award committee (for 2020).
    - ICSE,18, Msr award committees 2019,
  ○ 2018:
    - ICSE,18, Msr award committees 2018, SSBSE’18, ESEM 2018
  ○ 2017:
    - SoftwareMining’17, ICSE’17 (artifacts), PROMISE’18, MSR’18, ESEM’18, SPLC’17, EASE’17
  ○ 2016:
  ○ 2015:
    - Ase’15, BigDSE’15, Ease’15, EsPreSSE’15, Essem’15, Fse’15, Gecco'15, Icpc'15, Issre'15, Msr'15, NasBase’15, Promise’15, Raise’15, Ssbase’15
  ○ 2014:
    - MSR’14, ICSE14-demos, ICSE14-mainConference, DAPSE’14, EASE’14, GTSE’14, SAM 2014, SEAA 2014,
  ○ Before 2014:
    - SAM2103,
    - DAPSE’13
    - ICSE’13: demos
    - ASE-Tools’13
    - ISSRE’13
    - GTSE’13
    - MALIR’13
    - Software Mining -2012, 2013
    - RAISE’12, RAISE’13
    - FSE New ideas’11,
    - Software engineering week, 2011,
    - Spark’11
    - IEEE International Symposium on Software Reliability Engineering (2010,2009);
    - Pacific Knowledge Acquisition Workshop, 2009,2008
    - LSO (learning software organizations), 2008
    - Traceability in Emerging forms of SE , 2007
    - International Workshop on Living with Uncertainty (2007)
    - IEEE conference on high assurance software engineering (2007, 2004);
    - 17th International Conference on Automated Planning & Scheduling (2007)
    - MoChArt ’05 (model checking and AI)
    - Tim Menzies, vita page 7 of 23
IEEE Metrics 2003;
Numerous other PCs since 1991 including
- 8 international conferences
- 16 international workshops,
- 5 Australian national workshops.
- Organizing committee member for 2 international workshops, 4 national conferences and workshops.

Reviewer for: