

Leong Lee

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Email: leel@apsu.edu

EDUCATION

University of Missouri (Missouri University of Science and Technology) Ph.D. Computer Science	July 2010 GPA: 3.85
• Dissertation: Protein secondary structure prediction using BLAST and Relaxed Threshold Rule Induction from Coverings	
University of Missouri (Missouri University of Science and Technology) M.S. Computer Science	Dec 2007 GPA: 3.78
National University of Ireland, Dublin M.S. Information Management, with Honours	July 2000
National University of Singapore B.S. Computer and Information Sciences	Aug 1996
The Staff and Educational Development Association, UK Teaching in Higher Education Certification	Dec 2000

RESEARCH EXPERIENCE AND SKILLS HIGHLIGHTS

- Data mining and algorithm with respect to hydraulic geometry, spatial accuracy and precision, second order differential equation
- Protein secondary structure prediction, neural networks, association rule visualization
- Data mining with respect to bioinformatics, machine learning algorithms, analysis of large data sets
- Web application development for bioinformatics, ontology development, relational database design
- Proficient in programming (Perl, .NET, C#, PHP, MatLab, C/C++, Java, JavaScript, VB, XML etc)
- 6 years of experience in collaborating with interdisciplinary scientists to develop R&D software tools
- 9 years of experience in planning and coordinating complex system development projects

EMPLOYMENT

Austin Peay State University Associate Professor - Computer Science	Clarksville, TN Aug 2014 - present
Assistant Professor - Computer Science	Aug 2011 - July 2014
• Conducted research; performed faculty duties; developed and taught courses:	
○ Fall 2016: Web Database Concepts (online), Internship in IT, CS Internship, Web User Interface Design, Intro to Web Development	
▪ Fall I 2016 Fort Campbell (online): Web User Interface Design	
○ Summer (I) 2016: Content Management Systems (online)	
○ Summer 2016: Professional Science Internship, Internship in IT	
○ Spring 2016: Adv Web Development, Internship in IT, CS Internship, Intro to Web Dev, Content Management Systems	
○ Spring II 2016 Fort Campbell (online): Adv Web Development	
○ Fall 2015: Web Database Concepts (online), Internship in IT, CS Internship, Web User Interface Design, Intro to Web Development	
▪ Fall I & II 2015 Fort Campbell (online): Web User Interface Design, Adv Web Development	
○ Summer (II) 2015: Adv Web Development, Content Management Systems (online)	
○ Summer 2015: Professional Science Internship	
○ Spring 2015: Adv Web Development, Internship in IT, Intro to Web Dev, Content Management Sys	
▪ Spring II 2015 Fort Campbell (online): Adv Web Development	
○ Fall 2014: Web Database Concepts (online), Internship in IT, Web User Interface Design, Intro to Web Development	
▪ Fall I & II 2014 Fort Campbell (online): Web User Interface Design, Adv Web Development	
○ Summer (II) 2014: Adv Web Development	
○ Summer 2014: Intro to Database & Web Tech (online), Intro to Web Development (online)	
○ Spring 2014: Adv Web Development, Internship in IT, Intro to Web Development, Programming Selected Lang I (Java) (in class & online)	
▪ Spring II 2014 Fort Campbell (online): Adv Web Development	
○ Fall 2013: Web User Interface Design, Intro to Web Development (in class & online), Intro to Programming II (C++) (in class & online)	
▪ Fall II 2013 Fort Campbell (online): Adv Web Development	
○ Summer (II) 2013: Intro to Programming II, Adv Web Development	

EMPLOYMENT
CONTINUED...

- Spring 2013: Adv Web Development, Programming Selected Lang I (in class & online), Intro to Programming I (C++)
 - Spring I & II 2013 Fort Campbell (online): Intro to Programming I, Adv Web Development
- Fall 2012: Operating Systems (in class & online), Web User Interface Design, Intro to Programming II, Intro to Visual Basic
- Summer (II) 2012: Intro to Web Development
- Spring 2012: Adv Web Development, Programming Selected Lang I (in class & online), Intro to Programming I
- Fall 2011: Operating Systems (in class & online), Intro to Visual Basic, Intro to Programming I

EMPLOYMENT
CONTINUED...

University of North Carolina at Greensboro Greensboro, NC
Visiting Assistant Professor - Computer Science Aug 2010 - July 2011

- Conducted research; performed faculty duties; developed and taught courses:
 - Spring 2011: Bioinformatics, Adv Data Structures (in Java), Elem Data Structures and Algorithms
 - Fall 2010: Principles of Database Systems, Adv Data Structures (in Java), Foundations of Comp Sci I

University of Missouri (Missouri University of Science and Technology) Rolla, MO
Graduate Research Assistant Jan 2007 - July 2010

- Actively involved in NSF-funded research projects: AmphibAnat and MorphologyNet
- Designed/developed web-based RDBOM (Relational Database Ontology Maintenance) system
- Supervised undergraduate student research projects and graded assignments
- Taught classes for CS401 Adv Bioinformatics and CS311 Bioinformatics

Temasek Polytechnic, Temasek IT School Singapore
Lecturer / Course Coordinator May 1998 - Sept 2005

- **Lecturer:** Developed and taught multimedia related subjects such as:
 - Advanced Multimedia (game programming, Adobe Flash/ActionScript, Director and Lingo)
 - Streaming Media (PHP, MySQL, Apache Web Server, Adobe Premiere, webcasting)
 - User Interface Development (web interface design, Adobe Photoshop, Freehand)
 - Networked Multimedia (web page building, HTML, Adobe Dreamweaver and Fireworks)
- **External Projects:** Supervised student projects/competitions, managed external web projects:
 - World Skills Singapore Competition 2004, Web Design Trade - Judge
 - 37th World Skills Competition 2003, St. Gallen, Switzerland, IT-Software Applications Trade - Singapore Team Chief Trainer, student won silver medal
 - Supervised students to build the Singapore President's Challenge 2003 and 2002 websites
- **Course Coordinator** for Diploma of Internet Computing:
 - Administered the daily operations and planned curriculum for 500 students
 - Managed a team of year coordinators / lecturers

Shell Eastern Petroleum, Singapore Singapore
System Engineer Sept 1996 - May 1998

- **Web Master:** Shell Pulau Bukom Oil Refinery web master
- **System Administrator:** MS Win Server, FRESCO (Saros) database system, TRACCESS training system

SKILLS

Programming: MS ASP.NET, C#, PHP, MATLAB, Perl, C, C++, Visual Basic, Java, JavaScript / Ajax
Pascal, Flash ActionScript, Director Lingo, Linux Shell Script, HTML/CSS, SMIL, XML
Database: MySQL, Microsoft SQL, PostgreSQL
Server Administration: MS Win Server, MS IIS, Apache Web Server, Real/Helix Streaming Server
Web/Multimedia: Adobe Dreamweaver, Fireworks, Flash, Director, Photoshop, Premiere, MS Expression
Other Applications: MS Visual Studio, MS Office
Foreign Languages: Fluent in Chinese and Cantonese

PUBLICATIONS
PROCEEDINGS
PAPERS

- [1] L. Lee, M. Jones, G. S. Ridenour, S. J. Bennett, A. C. Majors, B. L. Melito, and M. J. Wilson, "Comparison of Accuracy and Precision of GPS-Enabled Mobile Devices," *Proc. IEEE CIT 2016, 16th IEEE Int. Conf. on Computer and Information Technology*, Yanuca Island, Fiji, Dec 7-10, 2016.
- [2] L. Lee, and G. S. Ridenour, "Using Data Mining to Investigate Interaction between Channel Characteristics and Hydraulic Geometry Channel Types," *Proc. 2014 IEEE Symp. Series on Computational Intelligence*, Orlando, Florida, USA, Dec 9-12, 2014, pp. 479-488.

PUBLICATIONS
PROCEEDINGS
PAPERS
CONTINUED...

- [3] L. Lee, M. Jones, G. S. Ridenour, M. P. Testa, and M. J. Wilson, “**Investigating and Comparing Spatial Accuracy and Precision of GPS-Enabled Devices in Middle Tennessee,**” *Proc. Geo-Informatics in Resource Management and Sustainable Ecosystem 2014*, Ypsilanti, Michigan, USA, Oct 3-5, 2014, pp. 215-224.
- [4] L. Lee, J. L. Leopold, and R. L. Frank, “**Protein Secondary Structure Prediction Using BLAST and Exhaustive RT-RICO, the Search for Optimal Segment Length and Threshold,**” *Proc. 2012 IEEE Symp. on Computational Intelligence in Bioinformatics and Computational Biology*, San Diego, California, USA, May 9-12, 2012, pp. 35-42.
- [5] L. Lee, J. L. Leopold, and R. L. Frank, “**Exhaustive RT-RICO Algorithm for Mining Association Rules in Protein Secondary Structure Sequence Data,**” *Proc. 2012 IEEE Symp. on Computational Intelligence in Bioinformatics and Computational Biology*, San Diego, California, USA, May 9-12, 2012, pp. 260-266.
- [6] L. Lee, J. L. Leopold, and R. L. Frank, “**Protein Secondary Structure Prediction Using BLAST and Relaxed Threshold Rule Induction from Coverings,**” *Proc. 2011 IEEE Symp. on Computational Intelligence in Bioinformatics and Computational Biology*, Paris, France, Apr 11-15, 2011.
- [7] L. Lee, J. L. Leopold, P. G. Edgett, and R. L. Frank, “**Rule Visualization of Protein Motif Sequence Data for Secondary Structure Prediction,**” *Computational Intelligence in Architecting Engineering Systems*, vol. 20, *Proc. Artificial Neural Networks in Engineering Conf. (ANNIE 2010)*, St. Louis, MO, USA, Nov 1-3, 2010, pp. 333-345.
- [8] P. G. Edgett, L. Lee, J. L. Leopold, and A. B. Coalter, “**Representation and Validation of Domain and Range Restrictions in a Relational Database Driven Ontology Maintenance System,**” *ACM ICPS, IDEAS '10 Proc. 14th Int. Database Engineering and Applications Symp.*, Montreal, QC, Canada, Aug 16-18, 2010, pp. 98-104.
- [9] L. Lee, J. Leopold, J. Albath, and A. Coalter, “**An Ontology Abstract Machine,**” *Proc. 2009 Int. Conf. on Ontological and Semantic Engineering*, Rome, Italy, Apr 28-30, 2009, pp. 494-505.
- [10] J. Leopold, A. Coalter, and L. Lee, “**A Generic, Functionally Comprehensive Approach to Maintaining an Ontology as a Relational Database,**” *Proc. 2009 Int. Conf. on Ontological and Semantic Engineering*, Rome, Italy, Apr 28-30, 2009, pp. 369-379.
- [11] L. Lee, J. L. Leopold, R. L. Frank, and A. M. Maglia, “**Protein Secondary Structure Prediction Using Rule Induction from Coverings,**” *Proc. 2009 IEEE Symp. on Computational Intelligence in Bioinformatics and Computational Biology*, Nashville, TN, USA, Mar 30 - Apr 2, 2009, pp. 79-86.
- [12] S. N. Jator, and L. Lee, “**Implementing a seventh-order linear multistep method in a predictor-corrector mode or block mode: which is more efficient for the general second order initial value problem,**” *SpringerPlus*, vol. 3, article 447, 2014.
- [13] L. Lee, J. L. Leopold, C. Kandoth, and R. L. Frank, “**Protein Secondary Structure Prediction Using RT-RICO: a Rule-Based Approach,**” *Open Bioinformatics J.*, vol. 4, pp. 17-30, 2010.
- [14] L. Lee, C. Kandoth, J. L. Leopold, and R. L. Frank, “**Protein Secondary Structure Prediction Using Parallelized Rule Induction from Coverings,**” *Int. J. Medicine and Medical Sciences*, vol. 1, no. 2, pp. 99-105, 2010.

PUBLICATIONS
JOURNAL
PAPERS

**RESEARCH
PROJECTS**

- Data Mining for Hydraulic Geometry and Related Channel Characteristics** Jan 2012 - present
 - Utilized data mining to establish a large database of hydraulic geometry and stream characteristics
 - Predicted hydraulic geometry to enable modeling sources of pollution where data is not available
- Second Order Initial Value Problem** Jan 2013 - present
 - Software development for a new improved mathematical approach to solve the “Second Order Initial Value Problem”
- Spatial Accuracy and Precision** Jan 2013 - present
 - Defining, calculating and comparing Spatial Accuracy and Precision of GPS-Enabled Devices.
- A New Protein Secondary Structure Prediction Algorithm** Aug 2006 - present
 - Developed a new protein secondary structure prediction algorithm using a data mining approach
 - Achieved a Q₃ accuracy score close to 90%, 10% higher than previously developed methods
- Amphibian Anatomical Ontology** - www.amphibanat.org May 2007 - July 2011
 - Theoretical ontology model, web/database server admin., web design, web application development
 - NSF-funded project to constructing semi-automatically a draft ontology of amphibian anatomy
- MorphologyNet** Jan 2007 - Dec 2008
 - Web/database server admin, web design, web application development
 - NSF-funded, freely available interactive library of 3D digital reconstructions of animal anatomy

**RESEARCH
PROJECTS
CONTINUED...**

- **J3 Roving Eye, The Mobile Surveillance System** Apr 2004 - Apr 2005
 - Supervised a team of three Temasek Polytechnic students, developed a surveillance tool through the use of surveillance vehicles which transmit moving images via the wireless network
 - Singapore Splash Awards Wireless Jam 2005, Top Prize - Enterprise Category
- **Mt Everest 2001, Mobile Satellite-Internet Expedition Webcasting System** Jun 2000 - Jun 2001
 - Satcom webcast for the Singapore Everest Mountaineering team at Everest Base Camp, Tibet.

**GRANTS /
FUNDS**

- Revitalization for Academic Success Initiative (\$4,400), Austin Peay State University, 2014
- Summer Research Fellows Program (\$5,000), Austin Peay State University, 2012
- Faculty Research Award Grant (\$500), Austin Peay State University, 2012
- Annual Equipment Award (\$2,146), Austin Peay State University, 2011

SCHOLARSHIPS

- Singapore Government Ministry of Education 1991/92 Hong Kong Pre-University **Scholarship**
- Singapore Government Ministry of Education 1989/90 Hong Kong Secondary **Scholarship**

SERVICES

- Member - Clarksville-Montgomery County School System, Information Technology Programs **Advisory Committee** 2012 - present
- Member - Academy of Computer and Game Programming **Advisory Committee** at Northeast High School, Clarksville-Montgomery County School System, Tennessee 2013 - present
- **Chair** - Austin Peay State University, Department of Computer Science, New **Faculty Search Committee** 2016 - 2017
- Member - Austin Peay State University, Web Content Management System **Selection Team**, and Design Team 2015 - present
- **Chair** - Austin Peay State University, Department of Computer Science, New **Faculty Search Committee** 2015 - 2016
- **Chair** - Austin Peay State University, Department of Computer Science, Department RTP (Retention, Tenure & Promotion) Criteria Revision Committee 2015 - 2016
- Member - Austin Peay State University, Department of Computer Science, New **Faculty Search Committee** 2014 - 2015
2013 - 2014
- **Chair** - Austin Peay State University, Department of Computer Science, New **Faculty Search Committee** 2013
- Co-organizer - Tennessee Middle School Mathematics Contest at APSU 2013
- Member - Austin Peay State University, Department of Computer Science, New **Faculty Search Committee** 2011 - 2012
- Member - University of North Carolina at Greensboro, Department of Computer Science, Undergraduate Committee 2010 - 2011
- President – Common Call Campus Ministry (Episcopal, Presbyterian and Lutheran), MS&T 2009 - 2010
- Co-organizer - Annual Amphibian Anatomical Ontology Workshop / Conference 2007 - 2008

PRESENTATIONS

- **L. Lee**, M. Jones, G. S. Ridenour, S. J. Bennett, A. C. Majors, B. L. Melito, and M. J. Wilson, presentation to the 16th IEEE Int. Conf. on Computer and Information Technology (IEEE CIT 2016) on “Comparison of Accuracy and Precision of GPS-Enabled Mobile Devices”, Yanuca Island, Fiji, Dec 7-10, 2016.
- **L. Lee**, G. S. Ridenour, M. Jones, S. J. Bennett, A. C. Majors, B. L. Melito, and M. J. Wilson, presentation to the ACM Mid-Southeast Conference on “Determining the Accuracy and Precision of Spatial Data through the Use of GPS-Enabled Mobile Devices”, Gatlinburg, Tennessee, USA, Nov 12-13, 2015.
- **L. Lee**, presentation to the APSU Mathematics & Statistics Fall 2015 Research Seminar on “Protein Secondary Structure Prediction Using Blast and Exhaustive RT-RICO”, Clarksville, Tennessee, USA, Sept 23, 2015.
- **L. Lee**, and G. S. Ridenour, presentation to the 2014 IEEE Symposium on Computational Intelligence and Data Mining on “Using Data Mining to Investigate Interaction between Channel Characteristics and Hydraulic Geometry Channel Types”, Orlando, Florida, USA, Dec 9-12, 2014.
- **L. Lee**, M. Jones, G. S. Ridenour, M. P. Testa, and M. J. Wilson, presentation to the 2nd Annual

PRESENTATIONS
CONTINUED...

International Conference on Geo-Informatics in Resource Management and Sustainable Ecosystem (GRMSE 2014) on “Investigating and Comparing Spatial Accuracy and Precision of GPS-Enabled Devices in Middle Tennessee”, Ypsilanti, Michigan, USA, Oct 3-5, 2014.

- **L. Lee**, and G. S. Ridenour, presentation to the ACM Mid-Southeast Conference on “Data Mining for Hydraulic Geometry”, Gatlinburg, Tennessee, USA, Nov 14-15, 2013.
- **L. Lee**, presentation to the Austin Peay State University Provost Lecture Series, on “Protein Secondary Structure Prediction Using BLAST and Exhaustive RT-RICO”, Clarksville, Tennessee, USA, Nov 29, 2012.
- **L. Lee**, presentation to the ACM Mid-Southeast Conference on “Teaching a New Web User Interface Design Course to Computer Science - Web Technology Undergraduates”, Gatlinburg, Tennessee, USA, Nov 15-16, 2012.
- **L. Lee**, J. L. Leopold, and R. L. Frank, presentation to the IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology 2012 on “Exhaustive RT-RICO Algorithm for Mining Association Rules in Protein Secondary Structure Sequence Data”, San Diego, CA, USA, May 11, 2012.
- **L. Lee**, J. L. Leopold, and R. L. Frank, poster presentation to the IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology 2012 on “Protein Secondary Structure Prediction Using BLAST and Exhaustive RT-RICO, the Search for Optimal Segment Length and Threshold”, San Diego, CA, USA, May 10, 2012.
- **L. Lee**, presentation to the ACM Student Chapter at APSU on “Design Principles for Web Development and Color”, Clarksville, Tennessee, USA, Feb 16, 2012.
- **L. Lee**, presentation to the ACM Mid-Southeast Conference on “Is 80% the Limit of Prediction Accuracy for Protein Secondary Structure Prediction?” Gatlinburg, Tennessee, USA, Nov 10-11, 2011.
- **L. Lee**, presentation to the University of Missouri (MS&T) Biological Sciences Department Seminar Series on “Protein Secondary Structure Prediction”, Rolla, MO, USA, Nov 1, 2010.
- **L. Lee**, J. L. Leopold, P. G. Edgett, and R. L. Frank, presentation to the ANNIE (Artificial Neural Networks in Engineering) 2010 Conference on “Rule Visualization of Protein Motif Sequence Data for Secondary Structure Prediction”, St. Louis, MO, Nov 2, 2010.
- **L. Lee**, presentation to the University of North Carolina at Greensboro Department of Computer Science Colloquium on “Rule Visualization of Protein Motif Sequence Data for Secondary Structure Prediction”, Greensboro, NC, USA, Oct 20, 2010.
- **L. Lee**, C. Kandoth, J. L. Leopold, and R. L. Frank, presentation to the International Conference on Computer, Electrical, and Systems Science, and Engineering on “Protein Secondary Structure Prediction Using Parallelized Rule Induction from Coverings”, Bangkok, Thailand, Dec 27, 2009.
- **L. Lee**, J. Leopold, J. Albath, and A. Coalter, two presentations to the International Conference on Ontological and Semantic Engineering on “An Ontology Abstract Machine” and “A Generic, Functionally Comprehensive Approach to Maintaining an Ontology as a Relational Database”, Rome, Italy, Apr 30, 2009.
- **L. Lee**, J. L. Leopold, R. L. Frank, and A. M. Maglia, presentation to the IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology 2009 on “Protein Secondary Structure Prediction Using Rule Induction from Coverings”, Nashville, TN, USA, Mar 31, 2009.
- **L. Lee**, J. L. Leopold, R. L. Frank, and A. M. Maglia, presentation to the University of Missouri (MS&T) Department of Computer Science Seminar on “A Computational Data Mining Method for Identifying Non-Independent Patterns in Protein Motif Sequence Data”, Rolla, MO, USA, Sept 27, 2007.

REVIEWER
/JUDGE
BOOK / GRANT
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CONFERENCE

- IEEE CIT 2016, 16th IEEE Int. Conf. on Computer and Information Technology, Yanuca Island, Fiji, Dec 7-10, 2016.
 - Served as **Session Chair** at the System Design session.
- 2015 IEEE Symp. on Computational Intelligence in Bioinformatics and Computational Biology, Niagara Falls, Canada, **Manuscript Review** (Five Papers)
- ACM Mid-Southeast Conference, Gatlinburg, Tennessee, USA, Nov 12-13, 2015.
 - Served as student paper **Judge** at the Undergraduate 4-year Presentations session.
- **Jones & Bartlett Learning**, June 2014, **Book Proposal Review** (One Database Textbook)
- 2014 IEEE Symp. on Computational Intelligence in Bioinformatics and Computational Biology, Honolulu, Hawaii, USA, **Manuscript Review** (Two Papers)

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/JUDGE**
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CONTINUED...

- **ACM** Mid-Southeast Conference, Gatlinburg, Tennessee, USA, Nov 14-15, 2013.
 - Served as **Session Chair** at the Doctoral Degree Presentations session.
 - Served as student paper **Judge** at the Doctoral Degree Presentations session.
 - Served as student paper **Judge** at the Undergraduate 4-year Presentations session.
- **Elsevier**, 2013, Journal: Computers in Biology and Medicine, **Manuscript Review** (One Paper)
- **Pearson** Education, July 2012, Comprehensive **Chapter-level Review** (One JavaScript Programming Textbook).
- **Pearson** Education, April 2012, **Pre-revision Review** (One Visual Basic Programming Textbook).
- Journal of the Tennessee Academy of Science, 2011, **Manuscript Review** (One Paper).
- The MOE Translational R&D and Innovation Fund (TIF), Singapore, 2011, **Grant Review** (One Grant Proposal).
- **National Science Foundation**, 2010, **Award Proposal Review** (One Funding Award Proposal).
- **IEEE** Symposium on Computational Intelligence in Bioinformatics and Computational Biology, 2009, **Manuscript Review** (One Paper).

MEMBERSHIP

IEEE Membership