

ZHONGXIU AURORA PEDDYCORD-LIU

Data Mining, Analytics & Machine Learning: R, SAS, Matlab, SQL, Python, Weka, SPSS | **Programming & Software Development:** Java, JavaScript, HTML, XML, CSS, C/C++, Python, Agile Development, Object Oriented Design | **Research & Experimental Design:** quantitative methods, qualitative methods, human factors, data collection, user study, statistical analysis, academic writing, public speaking | **Domain Knowledge:** E-learning, Educational Games, Educational Psychology

EDUCATION

Ph.D. Computer Science, 2014 – 2018

M.S. Computer Science, 2014 - 2016

North Carolina State University (NCSSU), GPA 3.83/4.0

B.Sc. Computer Science, *Minor in Mathematics, Statistics*, 2014

Worcester Polytechnic Institute (WPI), GPA 3.8/4.0, Graduated with High Distinction

RESEARCH EXPERIENCE

North Carolina State University, Game2Learn Lab, Dr. Tiffany Barnes, 2014 – 2018:

- I design and apply data mining and machine learning methods to derive practical insights in context.
- I am the student lead of an NSF project that uses data-driven approach to evaluate a large scale educational game (ST Math) for actionable change. I initiate, design, and execute research projects; I collaborate across disciplines and mentor other PhD students.
- I am experienced with designing, researching, and evaluating features in various e-learning systems
- I am the winner of NC State Computer Science department's Outstanding Research Award in 2018

Worcester Polytechnic Institute, Artificial Intelligence Lab, Dr. Neil Heffernan, 2012- 2014:

- ASSISTments is an intelligent tutor used by tens of thousands of users worldwide.
- Designed intervention messages and mechanism on detection of performance pattern.
- General programming, troubleshooting, user interface design, and classroom assistance.

MTA-Sztaki (Hungarian Academy of Science), Dr. Gabor Sarkozy, Dr. Andras Kornai, March- May 2013:

- Natural Language Processing: Created a method that automatically builds a sentence-level parallel corpus and a dictionary between Chinese, a high-density character-based language, and Hungarian, a medium-density word-based language.

INDUSTRY EXPERIENCE

SAS, Analytical Education Consultant, May 2017- present

- I analyze SAS e-learning data to derive actionable feedback for course design. I presented my work at the education department's mid year summary and executive meetings.
- I co-developed SAS Advanced Analytics Education's "Neural Work: Essential" course
- I participated in technical review and test teaching of courses that use SAS tool for data analytics and predictive modeling.

IBM Watson, Cognitive Software Engineer, May-Aug 2015

- In a team of 5, designed and developed a tool that compares Watson Oncology treatments' side effects. The product follows cognitive computing principles, adaptive to patients' preference, and pluggable to other Watson products. Actively involved designers and stakeholders in design and development processes.
- Conducted user study and patent writing.

NCSU, Teaching Assistant, Aug 2014 – Dec 2016

Worked as the head TA for Discrete Math. Led review sessions, and organized other teaching and grading activities in a timely manner.

Dell Inc., Embedded Systems Engineering Intern, Apr - Aug 2013

Programmed automated procedures to evaluate disk drive performance, and generate statistical report to help the team make informed decision on storage disk.

PUBLICATIONS

Peer-reviewed Conference and Journal Publications (7 first-authored full proceedings)

Peddycord-Liu, Z., Catete, V., J., Barnes, T., Lynch, Rutherford, T. (2019). A Teacher-focused Field Study to Investigate the Practical Gaps in the Design and Use of a Curriculum-integrated Educational Game. ACM CHI Conference on Human Factors in Computing Systems (CHI). Glasgow, UK. 2019 (full paper)

[Best Student Paper Nominee] Peddycord-Liu, Z., Harred R., Karamarkovich S., Barnes, T., Lynch, Rutherford, T. Learning Curve Analysis in a Large-Scale, Drill-and-Practice Serious Math Game: Where is Learning Support Needed?. International Conference on Artificial Intelligence in Education (AIED). London, UK. 2018. (full paper)

Liu, Z., Cody, C., Kessler, S., Barnes, T., Lynch, Rutherford, T. Using Serious Game Analytics to inform Digital Curricular Sequencing: What Math Objective Should Students Play Next? *ACM SIGCHI Annual Symposium on Computer-Human Interaction in Play (CHI-PLAY)*. Amsterdam, the Netherlands. 2017. (full paper)

Liu, Z., Cody, C., Barnes, T., Lynch, Rutherford, T. Antecedents of and Associations with Elective Replay in an Educational Game: Is Replay Worth It? *International Conference on Educational Data Mining*. Wuhan, China. 2017. (full paper)

Price, T., Liu, Z., Catete, C., Barnes, T. Factors Influencing Students' Help-Seeking Behavior while Programming with Human and Computer Tutors. *International Computing Education Research Conference*. Tacoma, USA. 2017. (full paper)

Liu, Z., Zhi, R., Hicks, A., Barnes, T. Understanding Problem Solving Behavior of 6-8 Graders in a Debugging Game *Computer Science Education*. Taylor and Francis, UK. 2017. (journal paper)

Liu, Z., Brown, R., Lynch, C., Barnes, T. Baker, R.S.J.d., Bergner, Y., Mcnamara, D. Difference in MOOC Learning by Geographical Location. *International Conference on Educational Data Mining*. Raleigh, USA. 2016. (full paper)

[Best Student Paper Nominee] Hicks, A., Liu, Z., Barnes, T. Measuring Gameplay Affordances of User-Generated Content in an Educational Game. *International Conference on Educational Data Mining*. Raleigh, USA. 2016. (full paper)

Liu, Z., Mostafavi, B., Barnes, T. Combining Worked Examples and Problem Solving in a Data-driven Logic Tutor. *International Conference on Intelligent Tutoring Systems*. Zagreb, Croatia. 2016. (short paper)

Mostafavi, B., Liu, Z., Barnes, T. Data-driven Proficiency Profiling. *International Conference on Educational Data Mining*. Madrid, Spain, 2015. (full paper)

Liu, Z., Pataranutaporn, V., Ocumpaugh, J., Baker, R.S.J.d. Sequences of Frustration and Confusion, and Learning. *The 6th International Conference on Educational Data Mining*. Memphis, USA, 2013. (full paper)

Technical Report

Liu, Z., Zhang, Y., Kornai, A., Sárközy, G. Automated Building of Sentence-Level Parallel Corpus and Chinese-Hungarian Dictionary. *Technical Report MQP-CDR-GXS1301*. Worcester Polytechnic Institute, 2013

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US Patent

Corville, A., Freed, A., **Liu, Z.**, Malo, A., Nayak, S., Rees-Jones, M., Shashidhara, S. System and Method for Optimizing Visualization for Comparative Treatment Analysis from a Cognitive and Personal Approach. US20170228505A1

SERVICE & INVOLVEMENT

I care about educational equity, and inclusiveness in STEM.

Reviewer: International Conference on Educational Data-Mining (EDM), Learning@Scale (L@S), Intelligent Tutoring Systems (ITS), International Journal for Artificial Intelligence in Education (IJAIED), IEEE Transactions on Games, IEEE Transactions on Learning Technologies

Outreach: Led NC State MSEN Middle School Computer Science Outreach Program for 2 years

Organization: International Honor Society for the Computing and Information Disciplines Member (UPE), Women in Computer Science (WICS), Grace Hopper Scholar (GHC), Students & Technology in Academia, Research and Service (STARS), Alpha Gamma Delta International Sorority (AGD)

References available upon request