

Xiao Liu

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Research interest

Programming language design and end-user software engineering. My research focuses on designing and implementing language related constructs that automate program concerns for end-users effectively and efficiently.

Education

- 2015–present **Ph.D. Information Sciences and Technology**, *Penn State University, University Park*, State College, PA, USA.
Advisor: Dinghao Wu. Research on End-user Programming, End-user Testing, End-user Debugging
- 2013–2015 **M.S. Information Sciences and Technology**, *Penn State University, University Park*, State College, PA, USA.
Thesis Committee: Dinghao Wu, Mary Beth Rosson, John Yen. Thesis: “Programming in Eliza”
- 2009–2013 **B.E. Communication and Information Engineering**, *Nanjing University of Posts and Telecommunications*, Nanjing, China.
Senior thesis advised by Longxiang Yang. Thesis: “A study on power allocation in cooperative communications”

Publication & Patent

- Liu, X.**, Jiang Y., Wu, D., Wu, L. Natural Shell: An Assistant for End-user Scripting. *The International Journal of People-Oriented Programming (IJPOP)*. Under Review.
- Jiang, Y., **Liu, X.**, Liu, F., Wu, D., Yen, J., Anumba, C. RESTful BIM Web Service Requirements and Design to Support Energy Efficient Building Lifecycle. *The Journal of Buildings*. In Press.
- Liu, X.**, Wu, D. PiE: Programming in Eliza. In *Proceedings of the 29th IEEE/ACM International Conference on Automated Software Engineering (ASE 2014)*, Västerås, Sweden 2014.
- Liu, X.**, Sun, F., Li, Z., Yang, L. A Novel Joint Data Partition and Forwarding Scheme for D2D Communications. In *Wireless Communications & Signal Processing, 2012 International Conference on, IEEE, 2012*
- Lu, Y., Zhang, D., Chen, Y., **Liu, X.**, Zong, P. Improvement of LEACH in Wireless Sensor Networks based on balanced energy strategy. In *Information and Automation, International Conference on, IEEE, 2012*
- Liu, X.**, Sun F., Lu, Y., Sun, H. National Patent (China): Self-Adaptive Washing Machine Rinsing System No. ZL 2011 2 0542174.2

Experience

- 2014-2016 **Teaching Assistant, IST 220**, *Penn State*, State College, PA.
Grade homework for IST 220 and hold office hour to teach both the Lab and in-class materials.

- 2013-Current **Research Assistant, Software Systems Security Lab, Penn State, State College, PA.**
Developed a plugin for Excel that automatically generates code for data manipulations from natural language descriptions by voice input.
Developed PiE (Programming in English), an intelligent dialogue system that automatically synthesizes LOGO programs from natural language descriptions. Published a paper to ACM ASE, a top conference in Software Engineering and I'm making it cloud-based.
Developed Natural Shell for starters/platform hoppers to script (csh, bash, batch) using English descriptions. Just submitted a paper to iConference.
- Summer 2015 **Research Intern, Smeal College of Business, Penn State, State College, PA.**
Worked with Brent Ambrose to implement an automatic grading system for spreadsheet assignment.
- Spring 2013 **Database Test Engineer, HuaQiang Holdings Limited, Shenzhen, China.**
Tested the ERP system of the company based on ASP and SQL server. Developed on a search engine for text files. Generated keywords for each file using tf/idf. This is a bonus task that earned me a reference letter from the vice CEO.
- Fall 2012 **Research Intern, R&D Center for Broadband Wireless Communications, Chinese Academy of Sciences, Nanjing, China.**
Applied Game Theory to power allocation in orthogonal AF relay network. Derived analytical result of power allocation method subject to outage probabilities.
Simulated the performance in the orthogonal amplify forward relay network using Matlab.
Won the "Best Undergraduate Thesis" based on the results from this research intern.

Selected Open Source Gadget

- Built an Type System for detecting Spreadsheet Errors using **Openpyxl**.
- Built an Automatically Grading System for Spreadsheet Assignment using **Java, POI** which is put into use by a professor in Smeal College of Business.
- Conducted the Movie reviews Sentiment Analysis based on Recursive Naive Bayes Learner for Sequence Classification using **Python, NLTK**.
- Classified webpages to Ads and non-Ads based on SVM using **R, kernlab**.
- Created a tool for "target conferences for your paper" ranking with topic relevance based on keywords and crawled data from Microsoft Academic Search using **Python**.
- Extracted the information from IFC file into a hierarchical structure using **Java**.
- Implemented a **Hadoop** based naive bayes spam filter using **Java, Apache Mahout**.
- Founded a Graduate Application Online Forum serves the students in my college. Built an auto-crawler for "PhD Recruit Information" from other forums using **Python**.
- Developed a classification system for Bank Direct Marketing (predict if a person will subscribe a term deposit) based on CART (a decision tree algorithm) using **R, CART**.

Technical Skills

- **Web Development:** JavaScript, HTML, CSS.
- **Data Analysis:** R, Python(scikit-learn), Weka.
- **Main Programming Languages:** Java, C and Python.
- **Substantial experience:** Prolog, ML, C#, Shell Scripting (Bash Csh), Winbat, and Matlab.

Award & Honor

- **Craigslist Women Grants Sponsor_Security**, 2015.
- **Machine Learning Summer School Scholarship**, 2014.