Tong (Tony) Liu

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Education

Williams College Class of 2016
Bachelor of Arts, Summa Cum Laude GPA: 3.99
Major: Computer Science with Highest Honors, Concentration: Cognitive Science

Research Experience

Medical Concept Embeddings, TensorFlow June 2017 – present

- Applying embeddings to medical concepts with IBM researchers Kenney Ng and Soumya Ghosh
- Specifically extending the Word2Vec CBOW model to learn representations of ICD9 codes
- Investigating both temporal data and medical ontology incorporation via attention mechanisms
- Using Tensorflow and Jupyter Notebook for model implementation and data analysis

Irregular Cellular Automata, C++ Fall 2015 – Spring 2016

- Undergraduate honors thesis, advised by Professor Duane Bailey
- Investigated spatially irregular cellular automata for conditions of emergent computation
- Presented as senior thesis defense and as a poster at the Conference on Complex Systems 2017

Curling Number, Python/C Winter 2015 – Spring 2015

- Explored a property of integer sequences called the *curling number* and worked on theorem proving
- Implemented and optimized programs to calculate curling numbers for large sequences

Left Leaning Red-Black Trees, Java Winter 2014 – Spring 2014

- Implemented and compared the advantages of LLRB Trees against standard binary search trees
- Presented during Williams College CS colloquium spring 2014

Work Experience

Watson Health Software Engineer, IBM August 2016 – present

- Working on an app that retrieves relevant information from EMRs supported by NLP and ML insights
- Initially responsible for DevOps support, implementing continuous delivery of infrastructure
- Currently responsible for the RESTful services connecting the data pipeline, cognitive insights, and UI
- Developed expertise in the FHIR API and helped design the data model used in the application

Extreme Blue Technical Intern, IBM Summer 2015

- Implemented a near real-time web dashboard and mobile app that delivered IT ticket analytics
- Used Java, Python, JavaScript, SPSS Modeler, and SOAP web services during implementation
- Developed project pitch and presented project to senior level IBM executives

Software Development Intern, IBM Summer 2014

- Built PoT hybrid cloud data storage system leveraging OpenStack Swift cloud services
- Performed investigation of cloud capabilities and built cost model to project savings
- Used RESTful web services, shell scripting, Java, C, and Python during implementation

Teaching Experience

Computer Science Teaching Assistant, Williams College Spring 2013 – Spring 2016

- Ran TA sessions, graded assignments, and helped lead lab sessions

TA Courses:

- CSCI 136: Data Structures and Advanced Programming Spring 2013
- CSCI 134: Introduction to Computer Science Spring 2014

- CSCI 237: Computer Organization Fall 2014
- CSCI 334: Principles of Programming Languages Spring 2015
- CSCI 135: Diving into the Deluge of Data Spring 2016

Peer Tutor, Williams College Fall 2013 – Spring 2014
- Ran one-on-one tutoring sessions helping students with problem sets and course material
- Tutored Courses: Multivariable Calculus, Principles of Microeconomics and Macroeconomics

Selected Projects

WUFS File System, C Spring 2015
- Implemented the Williams Unix File System, a Minix-like file system
- Built in single-level indirection data blocks with multithreaded kernel support

Infiniputt Video Game, C++/G3D Fall 2014
- Built a procedurally generated mini-golf computer game using the G3D Innovation Engine
- Used randomized path-finding algorithms to generate game levels, built 3D models using Blender

Procedural City Generation, Python/G3D Fall 2014
- Built a procedural building and city generator using a stack-based grammar
- Worked in a team of nine students, specific role was to design and implement building grammar

ARM Emulator, x86-64 Assembly Fall 2013
- All instructions in an ARM-based assembly were decoded and emulated in x86-based language
- Space-time tradeoff taken into account with implementation approach

Honors & Awards

Sam Goldberg Colloquium Prize, Williams College Computer Science June 2016
- Awarded for the best colloquium presentations in computer science, for honors thesis defense

Sigma Xi Society Associate Member, Williams College Computer Science June 2016
- Recognizes students who have demonstrated promise for the advancement of scientific research

Dr. I.S. Dribben 1924 Award, Williams College Golf February 2016
- Presented annually on the basis of dedication, sportsmanship, and perseverance

Phi Beta Kappa Honor Society Member, Williams College October 2015
- Membership based on academic standing, with the top 5% of students in the class elected Junior year

Ward Prize, Williams College Computer Science June 2015
- Awarded annually to the best project in computer science, for "Procedural City Generation"

Leadership & Extracurriculars

Williams College Computer Science Student Advisory Committee Fall 2015 – Spring 2016
- Organized social and educational events for the computer science department
- Helped evaluate faculty hiring candidates through interviews and by coordinating student feedback

Williams College Varsity Golf Team Fall 2012 – Spring 2016
- NESCAC All-Academic Team Fall 2014 and 2015
- NESCAC All-Sportsmanship Team Fall 2015