KEN TU

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SUMMARY

- Incoming Applied Scientist Intern @ Amazon Alexa
- Passionate about the synergy of human and AI to improve software development specifically and socio-technical ecosystems generally.
- Extensive individual & collaborative work in hyper-parameters tuning, NLP/NLU, recommendation systems, and statistical testing.
- Interested in infrastructure development and also research-oriented machine learning & data science positions

EDUCATION

NORTH CAROLINA STATE UNIVERSITY (NCSU) *Raleigh, NC*

M.S. in Computer Science — May 2019

Ph.D. in Computer Science — Expected: Dec 2021

- Advisor : Dr. Tim Menzies (h-index: 55) @ RAISE Lab (Real-world Artificial Intelligence for Software Engineering [SE])

APPALACHIAN STATE UNIVERSITY (ASU) *Boone, NC*

B.S. in Computational Mathematics, *magna cum laude* - GPA: 3.80 / 4.0 — May 2016

RELEVANT SKILLS

Programming	|	Python (4+ years), Java (3+ years), R, JavaScript, C++, & MySQL
Frameworks/Tools	|	Git, Apache Spark & Kafka, Scikit-learn, Keras, TensorFlow, Ansible, & Docker
Operating Systems	|	Linux (Ubuntu) & Windows
Languages	|	English & Vietnamese

PROFESSIONAL EXPERIENCES

Computer Science Department @ NCSU *Raleigh, NC*

RESEARCH ASSISTANT — August 2017 - Present

- AI4SE: Research & build tools that are human-focused/explainable AI to better software development.
- SE4AI: Conduct qualitative and quantitative studies to understand how SE processes/philosophies can improve AI.
- Current Projects: (1) NSF SI^2 applying empirical SE for computational science projects to improve software quality of non-traditional software development, and (2) building ML models that makes sense to human for SE tasks (e.g. why did this specific code fails) to increase the efficiency of software development

TEACHING ASSISTANT — August 2016 - Present

- Courses: Calculus I/II, Data Structure, SE, Parallel Architecture, & Artificial Intelligences
- Coordinate with the professor & other Teaching Assistants as a team to consolidate plans, structure the course, design tests, conduct review sessions, facilitate labs, and deliver the lesson effectively

Pinterest Inc. *San Francisco, CA*

MACHINE LEARNING ENGINEER INTERN — May 2019 - August 2019

- Users' interest recommendation: explored and built such prototype based on users' past activities to increase users' engagements and serve as useful metrics/features candidate generation for other functions (ads, homefeed, etc)
- Utilized Presto and Hive to extract raw records of >300k users. Designed and standardized the data preprocessing, features generation, and evaluation approaches for future extensions.
- Found biases within the existing/standard techniques of matrix factorization (PCA, SVD, NMF, & ALS) and proposed one that performed 17% less accurate but are 55% more diverse and 33% more relevant with temporal supervised learning (LR & SVM), & neural network (LSTM).

YouNet Inc. & Gumi Inc. *Boone, NC*

R&D DATA SCIENCE INTERN May 2017 - August 2017

- Devised and enhanced core products in the system to solve social-media related problems: (1) Facial Beauty Rating, (2) Facebook User's Age Prediction with Graph Clustering and Text Analytics, & (3) Car Detection.

Mathematics Department @ ASU *Boone, NC*

UNDERGRADUATE RESEARCH ASSISTANT August 2012 - August 2016

- Projects: (1) NBA Game's Performance Prediction and Outstanding Player Detection; (2) The Double Traveling Salesman Genetic Algorithm; (3) The Association between Physical with Mental Abuse in the Relationship and Victim's Mental Health; (4) The Algorithmic Complexity of Partitioning Graphs into Diads; (5) Establishing Program Priorities in an Organization Using Analytics; & (6) Creative Applications of Pascal's Triangle.

OverMountain Studios, Inc *Boone, NC*

GRAPHICS & WEB DEVELOPER INTERN May 2016 – August 2016

- Designed, built, and maintained three clients' applications with AngularJS/Bootstrap front-end & a NodeJS backend.
- Tested functionality of client websites, troubleshoot for issues and re-structured websites for scalability and usage.

University Housing @ ASU *Boone, NC*

RESIDENT ASSISTANT (RA) & VP of RA COUNCIL January 2013 – August 2015

- Organized building-wide and cross-building wide programs that fostered community for 500+ students.
- Expressed the voice of Resident Assistants and students on campus through composing policy and legislation proposals from Resident Assistant Council to University Housing Leadership (13 proposals in 1 year).
- Directly advised and collaborated with 4-5 new RAs and Chair of the residence hall council professionally to help develop their leadership.
- Ensured the enforcement of legal and university policy through campus-wide duty rounds to provide a safe and inclusive living environment for all members of the Appalachian State community.

PUBLICATIONS & RESEARCH PROJECTS

The Changing Nature of Computational Science

- [Submitted for FSE conference], as part of NSF SI^2. Through the investigation the relevance of 13 beliefs about SE practices within CS community, we can only endorse 4 beliefs. This implies (1) what kinds of tools we would propose to better support computational science and (2) research directions for both communities.

Identifying Self-Admitted Technical Debts with Jitterbug: A Two-step Approach

- [Submitted for TSE journal] Separated SATDs as hard and easy TDs to find close 100% of easy TDs while being able to find hard TDs more efficiently (with less human effort) than the prior state of the art methods.

Data Labelling with EMBLEM (and how that Impacts Defect Prediction)

- [Accepted for TSE], as part of NSF SI^2. A novel system with human + AI partnership (incremental SVM active learning) to label buggy commits 8 times faster and help build defect predictors 78% more accurate.

Is One Hyperparameter Optimizer Enough?

- [Accepted for IEEE SWAN] Empirical case study for hyperparameter tuning in defect prediction to questions the versatility of tuning's usefulness while proposing future research and expanding the definition of tuning.

Can you Explain that Text, Better? Comprehensible Text Analytics for SE Applications

- [Revising for Journal Submission] Novel combination method of LDA topic modeling and Fast Frugal Tree (depth of 4) to predict the severeness of bug reports in software analytics. Offers comparable performance but is more actionable than the common state-of-the-art text mining methods (TFIDF+SVM and LDADE+SVM).

Facebook User's Age Prediction

- Mined and investigated unstructured 22k Facebook users' posts through Vietnamese language processing with traditional machine learning methods, CNN, and LSTM to predict the user's age. Simple graph mining achieved comparable performance of accuracy = 79.6% and ~200% CPU speed improvement.

Facial Beauty Rating

- Developed a facial attractiveness rater based on the SCUT-FBP dataset, contains images of 500 Asian women and applying open-source OpenFace software to extract facial landmarks as features. Pearson correlation of 86%, convolutional neural networks outperform traditional machine learning method such as Random Forest (only 64%).

Yelp Businesses Recommendation System

- Built a recommendation system with Apache Spark and Alternative Least Square algorithm integrated users' reviews sentiment analysis along with other attributes on the 4.5+ million reviews and 146k+ businesses Yelp.

Developer Triage Bot

- Developed a task allocating bot on AWS that assigns suitable tasks for the developer and recommending experienced developers in the team to help them if needed in real time through Slack interface and Github task tracking.

AWARDS AND HONORS

ACM Richard Tapia – Diversity in Computing, 2018-19 | Scholar, IBM and AccessSTEM sponsored (17% acceptance)

ACM Joint ESEC/FSE Keynote, 2018 | Keynote Co-author for Top-tier SE conference

Pi Mu Epsilon Mathematics Honor Society, 2013-Present | Academic Excellence, top 5% of the class

Graduate Merits Fellowship, 2015-16 | Notable Mathematics Graduate Student ($10,000+), ASU

Hall Staff of the Year, 2013-15 | Distinct residence hall staff of the year for two consecutive years (5% acceptance)

Student Employee of The Year, 2014-15 | Undergraduate Research Assistant (5% acceptance)

Who's Who Among Students in American Universities, 2014-15 | National Recognition for Outstanding On-Campus Student Leader

Richard A. Thomas Memorial Scholarship, 2013-15 | Exemplary leadership in service & international learning in STEM 13% acceptance)

SERVICE

Research Program

ROSE @ ICSE COMMITTEE MEMBER 2020
IEEE TSE REVIEWER 2019
IEEE EMSE REVIEWER 2019
FSE STUDENT VOLUNTEER 2018

Asian Students In Alliance @ NCSU *Raleigh, NC*
COMMUNITY LIAISON Summer 2017 – Summer 2019

East Coast Asian American Student Union (ECAASU)
DIRECTOR OF ADVOCACY Summer 2016 – Summer 2019

- Supervise team of 6 national board members through on-going performance review, regularly scheduled team meetings, and in-service training
- Create and sustain advocacy and activism opportunities, sustainable resources, and leadership development within Asian youth community with different nationalities and marginalized identities such as annual conferences (750+ attendees), campus tours (15+ schools), official statements (30+), and online materials / training / workshops.
- Build relationship and strengthen collaboration with diverse organizations, communities, and colleges/universities locally and nationally to advance just causes and equitable human rights of minorities