KEN TU

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SUMMARY

- Researcher/Engineer, passionate about solving real-world problems and social issues empirically through development & research experience in the synergy of Software Engineering (SE) and AI
- Extensive individual & collaborative work in Search-Based SE, NLP, recommendation systems, graph modeling, and statistical testing

EDUCATION

NORTH CAROLINA STATE UNIVERSITY (NCSU) – *Raleigh, NC*
Ph.D. in Computer Science - GPA: 3.4 / 4.0 — Dec 2020

APPALACHIAN STATE UNIVERSITY (ASU) – *Boone, NC*
B.S. in Computational Mathematics, *magna cum laude* - GPA: 3.81 / 4.0 — May 2015

PROFESSIONAL EXPERIENCES

Graduate Assistant – *Computer Science Department, ASU + NCSU* — Fall 2016-Present

- Research Assistant: collaborate with Dr. Menzies at the RAISE Lab (Real-world AI for SE) for exploratory and experimental studies with future publication activities in human-focused and explainable AIs for SE
- Teaching Assistant: coordinate with the professor & other Teaching Assistants as a team to consolidate plans, structure the course, design tests, facilitate labs, and deliver the lesson effectively for SE, AI, Calculus, etc
- Current Projects: (1) applying empirical SE for computational science projects to improve software quality of non-traditional software development (NSF SI^2), and (2) building ML models that makes sense to human for SE tasks (e.g. why did specific code fails) to increase the efficiency of software development

Machine Learning Engineering Intern – *Pinterest, San Francisco* — Summer 2019

- Explored and built an interest recommendation system 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.
- Formulated the solution as matrix factorization (PCA, SVD, NMF, & ALS), traditional and temporal supervised learning (LR & SVM), & neural network (LSTM)

R&D Data Science Intern – *YouNet & Gumi* — Summer 2017

- Analyzed the semantics of data, optimized performance, & developed prototypes to solve social network problems
- Devised and enhanced core products in the system: Facial Beauty Rating, Facebook User's Age Prediction with Graph Clustering and Text Analytics, & Car Detection

Web Developer Intern – *OverMountain Studios, Inc* — Summer 2016

Resident Assistant – *University Housing, ASU* — Spring 2013 – Summer 2015

- Organized building-wide and cross building wide programs that fostered community for 500+ students
- Directly advised and collaborated with the RA Council general members, new RA(s), and Chair of the residence hall council professionally and efficiently to help develop their leadership
- Vice President of Policy of Resident Assistant (RA) Council - Represented the voice of RAs and on-campus students through composing and ensuring the enforcement of policy and legislation proposals as to University Housing Leadership to provide a safe and inclusive living environment for the Appalachian State community (6k+ students, 33%)

RELEVANT SKILLS

Teaching Assistant	|	Calculus I/II, Data Structure, SE, Parallel Architecture, & Artificial Intelligences
Programming	|	Python (4 years), Java (3 years), R (2 years), JavaScript, & MySQL
Frameworks/Tools	|	Scikit-learn, Keras, TensorFlow, Apache Spark & Kafka, Ansible, & Docker
Languages	|	English & Vietnamese

PUBLICATIONS & RESEARCH PROJECTS

Human-In-The-Loop for Computational Science Software Quality Assurance

- As part of NSF SI^2, in submission for journal. A novel system with human + AI partnership (incremental SVM active learning) to label buggy commits for defect prediction improving up to 48% and 26% of G-score and P_opt(20) .

Is One Hyperparameter Optimizer Enough?

- Accepted for NSF SWAN 2018. An extensive 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

- Novel combination method of LDA topic modeling and Fast Frugal Tree (depth of 4) to predict the severeness of software bug reports. Offers comparable performance but simpler (25%-250% smaller in scale) and faster (50 times faster) than the state-of-the-art text mining models (TFIDF+SVM and LDADE+SVM). Updating in progress for journal submission.

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 people and applying open-source OpenFace software to extract facial landmarks as features. With Pearson correlation of 0.86, CNN outperform traditional machine learning method such as Random Forest (only achieved 0.64).

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 & suggests suitable tasks for the developer along with recommending experienced developers in the team to help them if needed in real time through Slack interface and Github task tracking.

SIGNIFICANT AWARDS AND HONORS

ACM Joint ESEC/FSE Keynote, ***2018*** | Keynote Co-author

ACM Richard Tapia - Diversity in Computing, ***2018*** | Scholar, IBM sponsored (17% acceptance)

Pi Mu Epsilon Mathematics Honor Society, ***2013-Present*** | Academic Excellence, top 2% of the class

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

Hall Staff of the Year, ***2013-15*** | Distinct Resident Assistant for two consecutive years (5% acceptance)

Student Employee of The Year, ***2014-15*** | Outstanding Undergraduate Research Assistant (2.5% acceptance)

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

SERVICE

Community Liaison – *Asian Students In Alliance, NCSU* Summer 2017 – Present

Director of Advocacy – *East Coast Asian American Student Union (ECAASU)* Summer 2016 – Present

- Supervise team of 6 national board members through on-going performance review, 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 (850+ attendees), campus tours, online materials, and online 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