Dzung V. Pham

CONTACT INFORMATION

1120 8th Ave Apt. 2004
Seattle, WA 98101
USA

Mobile: (+1) 413-629-9759
E-mail: dzungvpham@gmail.com
Website: `dzungvpham.github.io`

EDUCATION

B.A. in Computer Science & in Statistics (with Honors) **June 2020**

Williams College, Williamstown, MA, USA

Thesis: *Exploring Variable Importance with Stacked Models.* Advisor: Prof. Richard D. De Veaux

Honors: Magna cum laude (GPA: **3.90/4.00**), Sigma Xi, Phi Beta Kappa, Mu Sigma Rho

Awards: Recipient of the 2019 Ward Prize for Best Project in Computer Science.

RESEARCH INTERESTS

I am interested in the design and implementation of adversary-robust AI/ML algorithms that can be practicably applied to solving real-world problems, including (but not limited to) e-commerce/financial fraud detection, cybersecurity, misinformation, etc.

RESEARCH EXPERIENCE

Exploring Variable Importance with Stacked Models - Senior Thesis - Williams College

I investigated the robustness of variable importance measures from stacked models to see if they are less susceptible to overestimating unimportant signals than the base models that form the stack. I focused on two model-agnostic methods, namely permutation importance and Sobol indices. From an empirical evaluation via simulation (leveraging the H2O's AutoML framework and Williams College's HPC clusters), I observed that the diversity of the base models played an important role in the quality of the stacked model's variable importance. The thesis was done under the supervision of Prof. Richard De Veaux and is available at `https://unbound.williams.edu/theses/islandora/object/studenttheses%3A1655`.

Fall Detection - Independent Research Project - Williams College **Jan 2019**

Inspired by recent research in video understanding, I designed and trained a two-stream convolutional neural network with transfer learning from MobileNetV2 to detect people falling in video input using Keras, TensorFlow and OpenCV. To achieve real-time inference, I replaced the optical flow stream with a Motion History Image stream. The project won the 2019 Ward Prize for Best Project in Computer Science at Williams College. Code is available at `github.com/dzungvpham/fall-detection-two-stream-cnn`.

SWELL - Research Assistant - Williams College **Dec 2018 - May 2019**

SWELL is an original education-focused programming language/interface that incorporates prodirect manipulation – a bidirectional link between source code and outputs. This allows the user to reason about the code by directly manipulating program outputs, which can in turn update the code itself. SWELL is available at `http://swell-lang.org`. Working as an RA for Prof. Dan Barowy, I:

- Designed and implemented major parts of the language including the parser, interpreter, abstract syntax tree as well as the web programming user interface.
- Taught the language to 5th-grade students at Williamstown Elementary School and helped analyze the collected data to evaluate the language's effectiveness in teaching beginners how to code.

Professional Experience

Facebook Inc., Seattle, WA, USA

Software Engineer – Machine Learning **Aug 2020 - Present**

I use Machine Learning to protect users on Facebook Marketplace from fraud, scam and harassment. This is an e-commerce platform that connects tens of millions of people everyday by providing a convenient method to discover, sell and buy all sorts of items. Given its massive user base, Marketplace attracts many malicious actors who engage in fraudulent or abusive activities. As an ML Engineer, my main responsibilities are as follow:

- Train and deploy a wide variety of ML models (e.g., deep neural nets, gradient-boosted trees) to identify bad actors quickly while minimizing harm to good users.
- Research and develop new modeling features to detect malicious behaviors.
- Build and maintain a scalable and resilient ML infrastructure that can support billions of interactions across multiple commerce surfaces daily.

Software Engineer Intern **Summer 2018 & 2019**

In my first internship with Facebook (2018), I built two internal tools to support dozens of software release engineers with managing version releases and debugging software build failures.
In my second internship (2019), I trained and deployed a ranking ML model to help Facebook employees discover internal job opportunities based on their career history, skills and preferences.

Teaching Experience

Teaching Assistant, Williams College **2017 - 2020**

Responsibilities: Grade assignments, hold office hours, help prepare problems and solutions.
Courses: Statistical Learning & Data Mining, Regression & Forecasting, Principles of Programming Languages, Algorithm Design & Analysis, Computer Organization, Data Structures & Advanced Programming, Introduction to Computer Science.

Publications

Quan Do, Kiersten Campbell, Emmie Hine, Dzung Pham, Alex Taylor, Iris Howley, Daniel Barowy. "Evaluating ProDirect Manipulation in Hour of Code". In *Proceedings of the 2019 ACM SIGPLAN SPLASH-E Symposium (SPLASH-E' 19)*, Athens, Greece, October 2019.

Services

Computer Science Student Advisory Committee, Williams College **2018 - 2019**

Organized the first mock tech interview program in the Computer Science department at Williams College to help fellow students apply for software engineering jobs in the tech industry.

Technical Skills

Languages: C/C++, Python, Java, JavaScript, PHP, SQL, R, Haskell
Libraries/Frameworks: PyTorch, TensorFlow, Keras, OpenCV, CUDA

References

Prof. Richard D. De Veaux
Math & Stats Department, Williams College
E-mail: rdeveaux@williams.edu

Pamela Bhattacharya, Ph.D.
Engineering Manager, Facebook, Inc.
E-mail: pamelabh@fb.com

Prof. Daniel W. Barowy
Computer Science Department, Williams College
E-mail: dbarowy@cs.williams.edu

Prof. Duane A. Bailey
Computer Science Department, Williams College
E-mail: bailey@cs.williams.edu