Tung D. Nguyen - Curriculum Vitae

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Research interests

Human-Computer Interaction, Social Network Analysis, Natural Language Processing, Data Mining, Information Retrieval, Machine Learning

Education

2015 – 2019 **Illinois Institute of Technology** – Chicago, IL
B.S., Computer Science (Math minor), summa cum laude, 2019
Major GPA: 3.94/4.0; Cumulative GPA: 3.85/4.0.

Selected coursework

- *Computer Science*: Machine Learning, Social Network Analysis, Deep Learning, Computer Vision, Computer Graphics, Database Organization
- *Applied Mathematics*: Probability & Statistics, Differential Equation, Linear Algebra, Multivariate & Vector Calculus, Finance

Awards / Scholarships

Leaders in Science and Technology Scholarship (Illinois Tech)
International Scholarship (IIllinois Tech)
Dean's List For 9 consecutive semesters (Illinois Tech)
Winner - HackRice 2016
2nd Place - Wells Fargo IIT Finance Hackathon
1st Place - Intel International Science and Engineering Fair Hanoi 2013

Publications

2019 **Estimating Tie Strength in Follower Networks to Measure Brand Perceptions**
Tung Nguyen, Li Zhang, Aron Culotta
2019 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM).

2014 **Utilizing starch and clay mineral to make affordable controlled -release fertilizer**

Tung Nguyen, Huy Nguyen, Trung Le, Ha Dao, Khoi Nguyen, Thang Tran, Manh Nguyen

Journal of Science & Technology Issue 52 - Vietnam Academy of Science and Technology.

Professional Experience

Jan'18 – Sep'19 **Text Analysis in the Public Interest (TAPI) Lab**

Mentor: Aron Culotta (Tulane University)

- Published a paper (**first author**) on estimating relationship strengths between a brand and its followers on Twitter, achieve average AUC of 0.84
- Collected public data of Twitter and Spotify users to research on understanding online user behaviors.
- Built a model which predicts possible shifts in music preferences of 10K Spotify users based on their playlists' data.

Sep'18 – Dec'18 **Fast Fourier Transform in deep music genre conversion**

Mentor: Edward Reingold (Illinois Tech)

- Research on Fast Fourier Transform and its applications.
- Generates musical blueprints for various genres (Rock, Blues, etc.,) using Short Time Fourier Transform.
- Use deep neural network and musical blueprints to convert songs to different genres. Achieve 60% in music genre classification model with GTZAN Dataset.

Jun'17 – Sep'17 **Lynx Project – University of Chicago's Bioinformatics group**

Mentors: Natalia Maltsev (University of Chicago), Gady Agam (Illinois Tech).

- Built a complete database of identical human protein sequences, aiding sequences identifying in bio-medical research.
- Developed a search engine (Flask, jQuery, AJAX, Bootstrap) to provide an easier access to the said database.
- Integrated BLAST, a powerful bio-medical tool, into the search engine for deeper sequences analysis and visualization.

Jan'14 – Dec'14 **Vietnam Academy of Science and Technology**
Mentors: Manh Nguyen, Khoi Nguyen (Vietnam Academy of Science and Technology

- Researched and published paper on controlled release fertilizer using starch and clay for Vietnam's mountainous climate
- Conduct live experiments on the developed fertilizer

Mar'20 – Present **Google, Search (Machine Learning Engineer)** – New York City, NY

- Working on user query understanding and Search Generative Experience (SGE)
- Improving and maintaining Search's ranking software infrastructure.
- Analyzing and processing large web documents to increase accuracy of Search question answering system.

Mar'19 – Aug'19 **BMW (Machine Learning Research Intern)** – Chicago, IL

- Built a real-time energy consumption prediction model that improves current in-car reading methods by 80%
- Created a model to predicts possible attainable destinations, given a car's gas level, with a 20% error margin.
- Researched on driver profiling to mitigate cold-start problem for driver behaviors prediction models.

Teaching experience

Aug'16 – Dec'17 **Teaching assistant, CS115-116: Object Oriented Programming (Illinois Tech)**
Developed weekly review sessions and grade over 50 students' programming assignments each semester.

Aug'17 – Dec'18 **Teaching assistant, CS331: Data Structures & Algorithms (Illinois Tech)**
Developed weekly review sessions and grade over 50 students' programming assignments each semester.

Selected Projects

Image and Real-time Video Style Transfer

- Utilized Convolutional Neural Network (VGG16) to build an image style transfer model (Keras, Tensorflow)
- Improved said model by 1000 times faster using perceptual losses and feed-forward network to transfer real-time video.

Self-driving Mars Robotic Miner in NASA Robotic Mining Competition 2018

- Created an obstacle detection and self-navigated system for a mining robot (LIDAR, Kinect, OpenCV and touch sensors).

Facebook users' community detection and friends suggestion

- Implement Girvan-Newman algorithm to detect and cluster communities from a users Facebook like list
- Suggest new friends for that user based on his Facebook social network structure and link prediction algorithms.

Utilize big data technologies to predict outcomes of competitive gaming matches

- Create a data pipeline to collect data from League of Legends Developer API to store on Azure Cosmos DB.
- Performed data processing and built a Logistic Regression model to predict outcome of each game match on Apache Spark (Azure HDInsight and Spark ML).
- Implemented the prediction model on an interactive web application.

Movies Recommendation and Sentimental Analysis

- Implement content-based recommendation algorithm based on more than 100000 ratings retrieved from MovieLens projects.
- Build a text classifier to determine whether a movie review from IMDB expresses positive or negative sentiment.

Demonstrate Computer Graphics' algorithms with WebGL and Javascript
Implement Phong illumination model, surface rendering methods, Bresenham line drawing algorithm and Cardinal splines interpolation on interactive web applications.

Harmonizing (HackRice 2016's winner)
Create a music-based social network (using Node.js, Express and Multer) that allows users to randomly harmonize with other members to cover a song, or to find partners for an acapella/music band.

Patutu Trade
A virtual stock-trading game for beginner in finance. It taught players how to do basic transactions and how to co-operate with media to predict the price of the stocks

Other Work

Illinois Tech Association of Computing Machinery - Board Member
Organize ScarlettHack - the first Major League Hacking Hackathon in Illinois Tech, attracted 200 developers.

G'LAMS - Founder
First Vietnamese-speaking student musical show produced by Hanoi-Amsterdam Hamlet Association of Art. Successfully ran for 9 years, attracting 5000 theatergoers.

After War Photography Exhibition - Designer & Photographer
An exhibition documented life after Vietnam war in Quang Tri (Vietnam), raising the society's awareness of the war consequences