

Tung D. Nguyen – Curriculum Vitae

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Research Interests

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

Education

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 and Statistics, Differential Equation, Linear Algebra, Multivariate and Vector Calculus, Finance

Publications

Estimating Tie Strength in Follower Networks to Measure Brand Perceptions

Tung Nguyen, Li Zhang, Aron Culotta. In *Proceedings of the 2019 International Symposium on Foundations and Applications of Big Data Analytics (ASONAM/FAB)*.

(3 citations in Google Scholar)

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

Honors/Awards

- Leaders in Science and Technology Scholarship, Illinois Institute of Technology
- International Scholarship, Illinois Institute of Technology
- Dean's List for 9 consecutive semesters, Illinois Institute of Technology
- Winner, HackRice, 2016
- 2nd Place, Wells Fargo IIT Finance Hackathon, 2017
- 1st Place, Intel International Science and Engineering Fair Hanoi, 2013

Experience

Google - Search

Machine Learning Engineer

Mar 2020 - Present

New York City, NY

- Improving triggering classifier for Search Generative Experience
- Working on Search's query understanding. Predict users' needs and facilitate triggering of relevant Search features using ML.
- Utilizing Large Language Models to improve Search triggering precision.

Text Analysis in the Public Interest (TAPI) Lab

Research Assistant - Advisor: Prof. Aron Culotta

Jan 2018 – Sep 2019

Chicago, IL

- Published a paper (**first author**) on estimating relationship strengths between a brand and its followers on Twitter, achieving average AUC of 0.84
- Built Spotify social-based music recommender on 5K users' followers network and playlists data. Achieved a **25% increase** in AUC (0.75).
- Researched on online users behavior: music tastes, mood shifts, and filter bubbles.

BMW

Machine Learning Research Intern

Mar 2019 - Aug 2019

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.
- Researched on driver profiling to mitigate cold-start problem for driver behaviors prediction models.

Prof. Edward M. Reingold Lab

Research Assistant - Advisor: Edward M. Reingold

Sep 2018 – Dec 2018

Chicago, IL

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

University of Chicago's Bioinformatics group - Lynx Project

Research Intern - Advisor(s): Natalia Maltsev, Gady Agam

Jun 2017 – Sep 2017

Chicago, IL

- Built a database to locate identical human protein sequences.
- Developed a search engine (Flask, jQuery, AJAX, Bootstrap) for said database.
- Integrated BLAST for deep sequences analysis and visualization.

Crafinity - A Personalized Gifts Brand

Data Scientist / Software Engineer

Jun 2015 – Dec 2019

Chicago, IL

- Developed an automated orders processing pipeline for 10 Etsy stores, handled **50K orders** with **1.5M total revenue**.
- Created logging framework for real-time sales analysis, reduce 85% Marketing cost

Vietnam Academy of Science and Technology
Research assistant - Advisors: Manh Nguyen, Khoi Nguyen

Jan 2014 – Dec 2014
Hanoi, Vietnam

- Published a paper on sustainable fertilizer for Vietnam's mountainous area
- Conducted live experiments on the developed fertilizer

Teaching Experience

Teaching Assistant
Illinois Institute of Technology
CS331: Data Structure & Algorithms

Aug 2017 - Dec 2018
Chicago, IL

Teaching Assistant
Illinois Institute of Technology
CS115-116: Object Oriented Programming

Aug 2016 - Dec 2017
Chicago, IL

Developed weekly review sessions and graded over 50 students' programming assignments each semester.

Selected Projects

Social Network Analysis

- Performed community detection and link prediction using Facebook "like" data and Girvan-Newman algorithm.
- Clustered Facebook graph into communities and make friend recommendation.
- Built a sentimental classifier based on IMDB movie reviews
- Implemented content-based recommendation algorithm.

Spotify's Social Music Recommender

- Researched on understanding friends (and followers) influence on users' music taste using Spotify users' playlists and their corresponding Twitter's networks.
- Built a next-song prediction model. Achieved 0.77 AUC, a **40% increase** from Spotify's current recommender.

Harmonizing (HackRice 2016's winner)

- Developed a crowdsourcing platform which lets users create community-based music. (using Node.js, Express and Multer)

Utilize big data technologies to predict outcomes of competitive gaming matches

- Created 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.

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).

Computer Graphics with WebGL and Javascript

- Implemented Phong illumination model, surface rendering methods, Bresenham line drawing algorithm and Cardinal splines interpolation on interactive web applications.

Patutu Trade

- Developed as virtual stock-trading game for beginner in finance. Taught users how to co-operate with media to predict the price of stocks.

Other Works

G'LAMS

Founder

First Vietnamese-speaking student musical show produced by Hanoi-Amsterdam Hamlet Association of Art. Successfully running for 9 years, attracting approx. 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

K-Zao

Associate

An exceptionally queer, handcrafted bespoke tailoring fashion brand.

Illinois Tech Association of Computing Machinery

Board Member

Organized ScarlettHack - the first Major League Hacking Hackathon in Illinois Tech, attracting 200 developers.