TUNG HOANG

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EDUCATION

University of Illinois at Chicago (UIC), Chicago, IL
Doctor of Philosophy in Applied Mathematics, GPA: 3.73/4.0 *August 2017*
Master of Science in Computer Science, GPA: 3.8/4.0 *May 2017*
Master of Science in Pure Mathematics, GPA: 3.92/4.0 *May 2011*
Selected courses: Machine Learning, Data Mining and Text Mining, Artificial Neural Network, Artificial Intelligence I, Database Systems, Computer Systems, Operating Systems, Software Design with Java, Statistical and Probability Theory, Computer Algorithms I and II, Computational Geometry, and Graph Theory.
Honors Program, Vietnam National University, Hanoi, Vietnam
Bachelor of Science in Mathematics, GPA: 3.7/4.0 *May 2006*

RELATED RESEARCH/PROJECTS

RESEARCH AND COURSE PROJECTS, UIC, Chicago, IL *2014-present*

- **Neural Network - Digit Classification with Backpropagation:** Implemented backpropagation algorithm with gradient descent. Designed and trained a 1-hidden layer (784 x 50 x 10) neural network to classify MNIST dataset with 60000 training images and 10000 testing images. Achieved 95% accuracy on testing data. Written in **Matlab**.
- **Data Mining:** Implemented **MS-Apriori** algorithm for Frequent Itemsets and Association Rule Generation, with options for multiple minimum supports, support difference constraint, and item constraints. Written in **Java**.
- **Machine Learning - Robotic Arm Dynamic Re-Training:** Designed and modified an adaptive classifier using Linear Discriminant Analysis for a single degree of freedom without affecting the accuracy or control performance for the remaining degrees of freedom in an upper limb prosthetic device. Achieved 98% accuracy. Written in **Matlab**.
- **RSA Encryption/ Decryption:** Designed and implemented a fast algorithm to encrypt data using public key and decrypt data using private key. Built user-defined BigInt class to hold big integers, with methods for fast multiplication, division, greatest common divisor, modulo, exponentiation. Written in **Java**.
- **Text Mining - Spam Detection:** Implemented a spam messages classifier using **Naive Bayes** model. Achieved 90% accuracy. Implemented another classifier using **Logistic Regression.** Achieved 92% accuracy. Written in **Matlab.**
- **Object Oriented Design - Monopoly Game:** Designed and implemented the board game Monopoly. Included 2 major components: (1) back end with classes to model players and the game board and (2) front end with a model of the game with user interaction. Leveraged inheritance and polymorphism in OOP. Written in **Java**.

RESEARCH ASSISTANT IN BIOINFORMATICS, UIC, Chicago, IL *2012-present*

- Applied Artificial Neural Network (**ANN**) to differentiate Enhancers from nonfunctional regions within DNA sequence. Designed and implemented **P**ower **S**pectrum-**M**oment method to classify genomes and genes using Discrete Fourier Transform (DFT) and power spectrum. Performed cluster analysis to analyze biological sequences using **PS-M**, improved speed up to 15 times while keeping accuracy on several cases. Written in **Matlab/ Python/ R.**

SKILLS

- *Proficient:* Java, C, C++, Matlab, F#, SQL, C#, R, ADO.NET, Maple, Threading.
- *Prior experience:* Python, HTML5, CSS, JavaScript, Linux Shell Script, Parallel Programming.

PUBLICATION

- **Hoang, Tung**, Changchuan Yin, and Stephen S-T. Yau. "Numerical encoding of DNA sequences by chaos game representation with application in similarity comparison." *Genomics* (2016).
- **Hoang, Tung**, et al. "A new method to cluster DNA sequences using Fourier power spectrum." *Journal of theoretical biology* 372 (2015): 135-145.

AWARDS/ ACTIVITIES

- Yeuk-Lam Yau-Leung Memorial Scholarship *2017*
- Coordinator of International Football Club at UIC *2011- present*
- Certificate of Peer Facilitator at the 2015 International TA Orientation at UIC *2015*
- Student Travel Award for FNFYT, CIMPA *2010, 2012*
- Vietnam Education Foundation Scholarship *2009*
- Scholarship of Rencontres du Vietnam *2006*
- National Mathematics Olympiad Gold Medal, Ministry of Education and Training, Vietnam Mathematics Society (rank 2/400) *2002*