

Bryan Kok

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Experience

Internships

- Jun. 2016 - Aug. 2016 | **Research Assistant**, Faculty of Science and Engineering, UNNC
Supervisor : Guoping Qiu
Color-layout based image retrieval system in Java/OpenCV
- > Debugged the existing approach which involved image segmentation and which constructed a random forest for each segment using a database of scaled and otherwise preprocessed images
 - > Implemented a Naïve Bayesian approach to predicting an intended image given an incomplete sketch
 - > Made numerous performance optimizations including a Swing GUI for visualization, an SQLite database for structured image feature storage, and multithreaded code which achieved a speedup almost linear to the number of cores in the machine during feature extraction

Education

- Fall 2014 - Spr. 2017 | **The University of Nottingham, Ningbo, China (UNNC)**
BSc. (Hons) Computer Science, 1st class, 82% final mark, British education system
Dean's scholarship (top 10%) recipient in 2015 and 2016

Selected coursework

- > Machine Learning (Final Year)
Strong command of the fundamentals of machine learning and pattern recognition, with a focus on neural nets and associated practical issues such as overfitting, training algorithms, and different network topologies. Applied various neural net configurations to the MNIST data set.
- > Software Quality Metrics (Final Year)
Techniques used in the development of quality software, including code inspections, continuous integration, relationships between metrics and desirable attributes, and testing approaches. Developed a test harness in Java and evaluated its effectiveness using executables with seeded defects

Dissertation

ExPo2 : High Speed Bot Interfaces

Supervisor : Paul Dempster

- > Augmented ExPo2, a rewrite of the ExPo stock exchange simulator in Java, with ZeroMQ and corresponding C and Java bot APIs to enable simulations of high frequency trading
- > Benchmarked the system with a custom harness to collect network latencies as well as micro-benchmarks on small snippets using JMH, and used VisualVM to profile for code hotspots
- > Integrated a protobuf representation of the original messaging protocol while still supporting legacy clients
- > Applied best practices in software engineering, including design patterns, modularization, and test suites to facilitate regression testing and maintenance

Projects

InstaSketch - Android Content-based Image Retrieval App

- > Evaluated various color and spatial image descriptors, including tree-based partitioning of the color space, color histograms, wavelet transforms, and SIFT descriptors, and their associated distance measures and preprocessing strategies
- > Implemented Bag of Words model on SIFT descriptors in the remote Python backend
- > Implemented color-histogram based matching in C++/JNI to retrieve similar images from the user's local photo album

Firefox for Android

- > Contributed a few patches to the frontend portion