Agastya Kalra

Student Developer - University of Waterloo Mathematics

Work

Data Analytics Developer Intern, **Genband**, June-August 2015

- Implemented business intelligence metrics with SQL databases
- Created Javascript tutorials for the Kandy RTC API.
- Gained experience with SQL, BlazeDS, Model View Controller Development, Java, Javascript and Actionscript.
- **4th out of 68** in the Genband Internal Kandy Hackathon (won an iPad!).

Software Developer, **Galadriel** (Startup), December 2015 - Present

- Improved an NLP Algorithm to remove over **50%** of edge cases.
- Played a key role in the development of a dashboard in Ruby on Rails.

Projects

Toe Tactics, submission for Hack Princeton. November - December 2015
A powerful AI that can play n-in-a-row games e.g. Gomoku and Tic Tac Toe.

- Wrote the minimax algorithm with alpha beta, forward and heuristic pruning in Java.
- Optimized to play **perfect 3, 4 in a row** on any size board, and wins against **80%** of online Gomoku players and **100%** of other online AIs
- Wrote a **Threat Search** to finds **20 move deep wins in less than 1 second**, using bit manipulation hackery, hashes and graphs in Python.

Stanford Machine Learning - Coursera, January 2016 Completing an online machine learning course taught by Stanford University.

- Implemented a neural network with vectorized back/forward propogation from scratch to recognize digits with **98%** accuracy in MATLAB.
- Implemented multi-variate regression and applied bias vs. variance error analysis for debugging in MATLAB.

Water Water Water, December 2015 Pixel-Art, Waterloo geese inspired runner game.

- Contributed to writing a powerful water simulator using a combination of Eulerian and Lagrangian particle physics in Java.

Knight's Tour Solver, October - November 2015
Moving a knight to all 64 squares on a chessboard in 63 moves.

- Combined bit manupulation hackery, balanced binary search trees, and graphs to produce over **100 solutions in 10 seconds** by brute force purely functionally in Racket.

Flash Games, 2012 - 2015
Made a variety of Object Oriented games in Flash using actionscript 3.0.

- Applied concepts including but not limited to: **Pixel Perfect Collision, Saveable Achievements, 2D-Physics, Coded Animations, and 3D Graphics Integration.**

About

Student Developer with a passion for AI, Software, Digital Art and Chess.

- agastya.kalra@gmail.com
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- (613)-986-5222

Skills

- Experience with **Python**, **Ruby**, **Rails**, **MATLAB**, **SQL**, **Javascript**, **Java**, **Racket** (Scheme), **Haskell**, **HTML**, **(S)CSS**, **GNU Octave**, **Actionscript**, **Git**, and **C/C++**.
- **Top 50** chess players, Canada 2013.
- Passion for creative approaches to visual/algorithmic design problems
- Proficient with Blender 3D and Adobe CS4+ for design and animation.
- Enthusiastic, self-motivated learner and active team leader and contributor.

Awards

- Technological Innovation Award Winner - Spirit of the Capital 2015
- **1st** at Canadian Youth Chess Championships 2013 U16.
- **61st** at World Youth Chess Championship 2013 U16.
- Prepared two students who finished **top 50** at World Youth Chess Championship 2014
- University of Waterloo President's Scholarship, and Mathematics Entrance Scholarship 2015
- **3rd** Canadian Technical Skills National Compeition

Clubs

- Vice President - UWSGI: A club for student happiness and world peace.
- Member - Waterloo Warriors Competitive Dance Team
- Instructor - Bollywood Dance
- Member - Computer Science Club
- Coach - UW Chess Team