Hengwei Guo

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EDUCATION

- **University of Toronto** — Toronto, ON
  M.A.Sc, Aerospace Engineering (Funded); Autonomous Space Robotics Lab; GPA: 4.00 — *Sep. 2016 – Present*
- **University of Toronto** — Toronto, ON
  Bachelor of Science in Computer Science and Statistics; Focus in Artificial Intelligence — *Sept. 2012 – June. 2016*
  Graduate with High Distinction; GPA: 3.84

TECHNICAL BACKGROUND

- **Skills**:
  - Object-oriented Programming: Python, Java, C++
  - Scientific Programming: MatLab, R, SAS, Python scientific libs (numpy, scikit-learn, pandas, PyTorch)
  - Functional and Logic Programming: Haskell, Scheme, ML, Prolog
  - Web Programming and Database: PHP, Javascript/Jquery, HTML5, CSS3, SQL, XML
  - Version Control and Continuous Integration: svn, git
  - Package Control and Continuous Integration: Maven, Gulp, ROS catkin, Bower, Jenkins, SonarQube, JIRA
  - Operating Systems: Microsoft, Mac OS, Linux
- **Additions**:
  - Knowledge of AI/machine learning models and statistical tools
  - Familiar with databases and web development frameworks (AngularJS, Apache Spring, SQL server etc.)
  - Knowledge of mobile robot development and state estimation for autonomous vehicles.
  - Knowledge of software engineering (delivery methodology, requirement engineering etc.)
  - Experience with cloud computing platforms (Microsoft Azure, Amazon AWS, IBM Watson)

EXPERIENCE

- **SmartFinance LLC.** — New York, NY
  Data Scientist (part-time) — *Sept 2015 - Feb 2016*
  - **Machine-learning Application Development**: Implemented a machine-learning based mobile application for financial institution clients in which users can use human languages (voice and text) to query about their credit card statistics.
  - **Data Structure Optimization**: Introduced the Patricia Trie data structure into the query searching system. Improved the searching time from linear in terms of the database size, to linear in terms of the query string length.

- **Ontario Teachers' Pension Plan** — Toronto, ON
  Software Developer — *Sept 2013 - Sept 2014*
  - **Web Application Development**: Developed new features and fixed bugs for the member service website (closed more than 40 tickets). Wrote web tools for finance departments for fast documents retrieval.
  - **Continuous Integration**: Developed plugins for project continuous integration test platforms (SonarQube, Atlassian Bamboo) and wrote more than 200 unit/integration tests.

- **University of Toronto** — Toronto, ON
  Teaching Assistant — *Sept 2014 - Present*
  - **CSC401/2511**: Natural Language Computing; Winter 2016 (Tutorials, Marking)
  - **CSC324H1**: Principles of Programming Languages; Fall 2014, Fall 2015 (Labs, Marking)
  - **CSC263H1**: Data Structures and Analysis; Winter 2015 (Marking)
  - **CSC236H1**: Introduction to the Theory of Computation; Fall 2014 (Tutorials, Q&A, Marking)

SELECTED PROJECTS

- **Road Detection and Car Viewpoint Classification**: Used deep learning plus traditional ML models to segment road and classify car viewpoints in stereo images. **Ranked 1st place in Fall 2015 Image Understanding class**.
- **Financial Risk Prediction through Topic Models**: Predicting stock return volatility from annual financial report using topic models (LDA, HMM-LDA and LSI) plus Support Vector Regression.
- **Machine Translation between English and French**: Built a statistical world-alignment model between English and French using the IBM-1 model with bigrams and unigrams and add-δ discounting.
- **Robust Canadian Traveller Planner**: Proposed a new route planning algorithm for autonomous cars travelling in uncertain environment. One conference paper in progress targeting IROS 2018.
- **Socially-assistive Robot** : Developed the knowledge base and action modules of a proof-of-concept assistive robot that interacts with a POMDP planner to provide personal health-care services to dementia patients.

CAMPUS ACTIVITIES

- **UofT Web Development Club President (2015)**: Organized tutorials on web programming technologies. Liaison between the university faculties, student union and other clubs. Worked on the clubs website design and side projects.