Robert **Balayan**

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Recent University of Toronto graduate trying out Gradient Ascent IRL. Looking to work with Natural Language Processing and Machine Learning.

summary

- Experienced in Machine Learning, Natural Language Processing and Computational Linguistics, General AI Theory, and Knowledge Representation.
- Programming Languages: Python, C, Java, Matlab, R, SQL.
- Frameworks and tools: NumPy, TensorFlow, keras, AWS, Hadoop, NLTK, LaTeX.
- Solid mathematical and statistical background.

education

2014-2017 **HONOURS BACHELOR OF SCIENCE**
University of Toronto, Canada
Computer Science Specialist with Focus in Artificial Intelligence
Fields studied:

- Machine Learning, Convolutional and Recurrent Neural Networks
- Computational Linguistics and Formal languages, Natural Language Processing, Phonetics
- General AI theory, Knowledge Representation and Reasoning
- Graph Theory and Algorithm Design
- Statistics, Linear Algebra and Multivariable Calculus

2017- **CERTIFICATIONS**
Coursera
Hadoop Platform and Application Framework, License D6W6PEBPALWW

skills and experiences

- 4+ years of experience **programming in Python**: from manipulating SQL databases to Neural Networks and Deep Learning using Numpy, TensorFlow and Keras to Chart parsing and word sense disambiguation using NLTK. This is my language of choice for both personal projects and research. Please see my most recent research project as an example "Exploiting Structure For Classification Of Handwritten Japanese Characters" (Github).
- Additional experiences with **Machine Learning in Matlab** (statistical machine translation, acoustic perception, Hidden Markov Models, Mixture of Gaussians); limited experience with **low-level programming in C/C++** (Kernel extensions, file-system manipulation, computer graphics in OpenGL);
- Experience designing both discriminative and generative models for image classification, voice recognition and language modeling. Deep understanding of the Machine Learning theory and algorithms, as well as of limitations imposed by hardware.
- Experience with machine translation. Implemented IBM Model-1 and trained it on Hansard corpus for English-French translation.
- Interest in Natural Language Processing and Computational linguistics. Familiarity with basics of Information Retrieval, Speech Recognition and Synthesis, Word sense disambiguation, statistical chart parsing disambiguation, and Question Answering.
- Experience designing relational databases and implementing them in MySQL, PostgreSQL and SQLite. Experience with **HDFS and HBase** as part of Hadoop Platform and Application Framework certification.
- Experience building Context Free Grammars and Automatas for abstractly defined languages as well as approximating natural languages. Experience extending natural language CFGs with features and using these grammars for parsing with The Attribute Logic Engine.
- Experience analyzing speech recordings using Praat.

projects

CSC412 Solo Research Project: Exploiting Structure For Classification Of Handwritten Japanese Characters.

- Developed a parser for the ETL datasets.
- Tested 4 different architectures with 2 different goals: direct kanji classification and multilabel classification of radicals that make up the kanji.
- Used AWS EC2 p2.xlarge and c4.8xlarge instances to train the models in parallel.
- Compiled the report in LaTeX, generally following standards used for publications.
- Published all source code and the report on Github

CSC384 Group Research Project: Constraint Satisfaction Problem Algorithm Analysis

- Was the *de facto* team leader
- Provided the team with a selection of algorithms outside of the course's scope that would be interesting to analyze. Final selection was iterative improvement, path consistency, and a tree-specific algorithms.
- Regularly checked in on the other member's progress, helped if they had any problems.
- Used SVN for subversion controll.
- Compiled the report in LaTeX.

CSC343 Solo Project: SQL-based course recommendation engine. (Github)

CSC321 Solo Project: Face classification using AlexNet, implemented in TensorFlow.

languages

English	Fluent
Russian	Fluent
Armenian	Conversational
Japanese	Basic

interests and hobbies

Artificial Intelligence: I have always been interested with AI and inspired by its portrayal in science fiction. It is my dream to work on implementing a general AI. One of the most interesting roadblocks to me is the way humans interact with AI: in science fiction it is almost always seamless, like talking to another person. Personally I have always had interest in Natural Languages, so this is one of the fields I would like to study in depth.

Sports: I am an avid cyclist. I train with the University of Toronto Road Racing team and participate in various local cycling events. During my recent trip to Japan, I climbed Mount Fuji on bike and toured around the Kanto region. I also enjoy diving and have various advanced diving certifications. Recently developed interest in motorsports, regularly practice racing in simulations.

Traveling: I enjoy traveling whenever I have the opportunity. I have visited many countries, including Japan, Spain, France, Italy, England, Germany, Egypt, Turkey, Georgia and Armenia. Lately, I have been traveling with my road bike and touring in the places I visit.

GunPla: One of my favourite hobbies is building plastic model kits. Over time I have built dozens of kits and as a result have a collection of Mobile Suit Gundam and Warhammer 40K figurines.

Magic the Gathering: I enjoy the card game as a challenge for building the best deck possible out of limited resources provided. Occasionally participate in tournaments.