Rockson Chang

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Experience

2016 - Current **Insight Data Science Fellow**, *New York, NY*
Project: *Etsy Art Shark – Estimating the market value of art,* www.etsyartshark.com
- Developed an application that estimates the market value of paintings on Etsy.
- Trained a random forest regressor on a rich feature space derived from numerical data, text (NLP: Bag-of-Words), and images (CNN to extract painting style, PCA to reduce dimensionality).

2013-2016 **Research Associate**, *Atom Optics group, Laboratoire Charles Fabry, Palaiseau, France*
- Developed new techniques for the detection of low-temperature quantum gases.
- Performed event reconstruction and correlation analyses on large data sets consisting of tens of thousands of images per data run. Used unsupervised learning techniques to treat imaging noise.

2005-2013 **Research Assistant**, *Department of Physics, University of Toronto, Canada*
- Demonstrated new regimes of quantum transport for particles in confined crystalline geometries.
- Developed numerical simulations of multi-dimensional non-linear differential equations.
- Served as project leader for a team of four research assistants (2010-2013).

2005-2015 **Teaching**, *10 years teaching experience, recent courses:*
- Master 2 « Optique, Matière à Paris », Université Paris Sud (2014-2015)
  Provided tutorials and practical demonstrations of a quantum gases apparatus to Master's students.
- PHY335 - Quantum Mechanics for ECE, University of Toronto (2013)
  Prepared syllabus and led bi-weekly tutorials for undergraduate students (class of 30 students).

Education

2006-2013 **Doctor of Philosophy**
Department of Physics, University of Toronto, Canada
Thesis: *Exploring matter-wave dynamics with a Bose-Einstein condensate*

2005-2006 **Master of Science**
Department of Physics, University of Toronto, Canada
Thesis: *An optical-dipole trap for experiments with Bose-Einstein condensates*

2001-2005 **Bachelor of Engineering Science**
Major in Engineering Physics with first class honors, Queen's University, Canada
4th year thesis: *Single-electron transistors*

Side Projects

Science Trends
- Developed an application to study trends in science, as represented by arXiv submissions.
- Performed latent semantic indexing of 50,000 quantum physics articles using Gensim.
- Web application coded in Python, deployed to Heroku using Flask.

Skills

Analysis: *Dimensionality reduction*: PCA, Gram-Schmidt decomposition; *NLP*: Bag-of-Words and Tf-idf representations, latent semantic indexing for topic modeling; regression methods.

Programming languages: Python, Matlab, SQL, Maple, Labview.

Packages: Scikit-Learn, Gensim, BeautifulSoup, NumPy, Pandas, Bokeh, Flask.

Web: HTML, Javascript, Heroku, Amazon Web Service.

Spoken Languages: English (native), French (professional working proficiency).