James Schmitz

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SUMMARY

Quantitative and technical professional with years of experience in data analysis, modeling, and research. Driven by curiosity to explore creative applications of machine learning, computer graphics, mathematics, and complex data. Proficient at software development and able to learn new technologies and programming languages quickly.

EDUCATION

New York University

Master of Professional Studies, Interactive Telecommunications Program — *Aug. 2017 – May 2019*

New York University — GPA: 3.7

Master of Science in Mathematics — *Aug. 2003 – Jan. 2005*

Rensselaer Polytechnic Institute — GPA: 3.9

Bachelor of Science in Mathematics, Bachelor of Science in Computer Science — *Aug. 1993 – May 1997*

SKILLS

- **Languages**: Python 2/3, R, C, C++, Java, Scala, JavaScript, q, SQL
- **Creative Tools**: Photoshop, Illustrator, Audition, Premiere, After Effects, Processing, Inkscape
- **Databases**: KDB+, SQL Server, Netezza, MySQL, SQLite
- **Python Tools**: IPython, NumPy, pandas, scikit-learn, Bokeh, matplotlib, Seaborn
- **Operating Systems**: Linux, Windows 10

PUBLICATIONS

J. Schmitz, "Algorithmic Trading in the Iowa Electronic Markets," in *Algorithmic Finance*, 2012, 1:2, 157-181

ACADEMIC PROJECTS (Portfolio: http://ixora.io/projects/)

3D Printed Hypercubes (Python, Rhino SDK, Dragonframe, Adobe CC)

- **Mathematical Modeling**: Derived equations for a perspective projection of a 4D hypercube to 3D space and used Python and Rhino SDK to model objects for 3D printing
- **Stop-Motion Animation**: Created a stop motion animation of a floating hypercube rotating in 4D space with Dragonframe and 3D printed objects

"Great Heart" Meditation Device (Physical Computing, Interactive Design, Python)

- **Physical Computing**: Collaborated with teammate to design and fabricate meditation device using pulse sensor and electronic components to teach users controlled breathing exercises and provide real time bio-feedback
- **Signal Processing**: Researched heartbeat detection accuracy using Python and improved open source algorithm to share with fellow students and Arduino community

After Effects VFX Project (Adobe After Effects, ExtendScript, Python)

- **VFX Design**: Reverse-engineered special effects used in online video and prototyped 3D calculations in Python
- **After Effects Automation**: Created After Effects ExtendScript code to automate VFX workflow and set precise 3D transformation settings, enabling the rapid development of After Effects animation

PROFESSIONAL EXPERIENCE

Data Science Education (Python)

- **Teaching**: Educated students in data acquisition, cleaning, analysis, and machine learning tools as an instructor for corporate and online Python data science training classes
- **Writing**: Composed Data Science educational materials covering the fundamentals of the Python programming language and Pandas, NumPy, and matplotlib libraries

Python Research Platform (Python, SQL)

- **Leadership**: Enhanced non-technical team's software capabilities by educating and motivating teammates to learn about Python libraries, proper software development practices, and unit testing
- **Python Infrastructure**: Designed and implemented Python infrastructure to facilitate the development of quantitative trading strategies and the automation of daily workflow management calculations and reporting

Student Loan APR Calculator (Python, AWS)
- **Quantitative Accuracy**: Achieved precise and audited APR (Annual Percentage Rate) calculation accuracy compared to the industry accuracy requirement of $\pm\frac{1}{8}\%$ by researching legal standards for APR reporting
- **Cloud Computing**: Created Python AWS Lambda functions to calculate student loan APRs for loan origination

High Frequency Data Visualization Framework (Java, JavaScript, KDB+/q, SQL)
- **Data Visualization**: Conceived and developed a visualization framework for high frequency data in KDB+/q, Java, and JavaScript for use in trading surveillance and understanding market microstructure
- **Data Analysis**: Identified specific predatory and problematic trading patterns with visualization framework and communicated their relevance to non-quantitative people, resulting in appropriate actions to improve client trading

OPEN SOURCE PROJECTS

Camera3D (Java, Processing)

Code repository: http://github.com/hx2A/Camera3D

Documentation: http://ixora.io/projects/camera-3D
- **Processing Library**: Conceived and developed a Processing (processing.org) library extension in Java for creating 3D anaglyphs and other stereoscopic animations
- **3D Effects**: Implemented easy to use tools providing a collection of 3D effects, including ColorCode 3D, barrel distortion, split frame, and split depth illusions
- **Anaglyphs**: Developed efficient algorithm for real-time generation of chromatically optimal "Dubois Anaglyphs," resulting in a 300x performance improvement over the default implementation
- **360 Video**: Developed efficient algorithm to generate high resolution 360 videos, irrespective of hardware limitations

ColorBlindness (Java, Processing)

Code repository: http://github.com/hx2A/ColorBlindness

Documentation: http://ixora.io/projects/colorblindness
- **Processing Library**: Created Processing library extension for simulating color blindness in real-time animations

TRAINING

The Data Incubator	New York, NY
Data Science Fellowship	*Jan. 2016 – Feb. 2016*

- **Training Program**: Selected from the top ~2% of thousands of applicants to participate in a rigorous 2-month data science training program and learn modern data science tools
- **Data Science**: Studied web-scraping, SQL, natural language processing, machine learning, and distributed computing through weekly Python and Scala (Spark) projects

WORK HISTORY

The Data Incubator	New York, NY
Data Science Instructor	*Jul. 2016 – Oct. 2017*
Credit Suisse	New York, NY
Vice President, Asset Management	*Jul. 2014 – Oct. 2015*
Barclays	New York, NY
Vice President, Electronic Trading	*Apr. 2011 – Apr. 2014*
Highbridge Capital Management	New York, NY
Consultant, Global Macro Desk	*Jul. 2010 – Apr. 2011*
WorldQuant	New York, NY
Associate Portfolio Manager	*Aug. 2009 – Nov. 2009*
Pragma Securities	New York, NY
Vice President, Quantitative Engineering	*Feb. 2006 – Jul. 2009*
Merrill Lynch	New York, NY
Associate Trader, Global Equity Derivatives Trading Desk	*Jan. 2005 – Feb. 2006*
Summer Associate, Global Equity Derivatives Trading Desk	*Jun. 2004 – Aug. 2004*
Assistant Vice President, Investment Banking Client Technology	*May. 2002 – Sep. 2003*
Sapient Corporation	Jersey City, NJ
Senior Software Developer/Technical Specialist	*Jun. 1997 – Feb. 2002*

INTERESTS

Piano, Classical music, Volunteering, Creative coding, Physical fitness, Snowboarding