Cheng-Hsien Li
69-45 108th St APT 2F
Forest Hills, NY 11375
(612) 817 4996
cheng.hsien.li.career@gmail.com

Parallel Partners
Chicago, IL

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Dear Mr. Garcia,

Prior to my graduation, I joined a start-up company in the risk management sector and started to work on a credit value at risk calculation for corporate bonds. In my current role, I often take the initiatives to identify relevant quantitative methods to address issues raised during our weekly meetings. This experience has reassured me that a career in quantitative finance provides opportunities to make real impact with my skills.

My PhD training in physics granted me a variety of expertise in applied mathematics and statistics. While the main theory of my dissertation was developed in a pencil-and-paper approach, my problem-solving skills had been strengthened by the constant need of numerical computation in my graduate research; I acquired familiarity with a comprehensive numerical library for C/C++ language and became proficient in implementing ad hoc numerical solutions and Monte Carlo simulations. My last dissertation project involved hypothesis testing of the latest supernova models and it offered a great opportunity to set my foot in statistical analysis. In addition, I have completed the *Machine Learning* course from Coursera from which I learned about data analytics methodologies as well as cross-validation of empirical models. These quantitative and technical skills will allow me to comprehend and implement models to fulfill the analyst's responsibilities.

As a critical thinker and a careful researcher, there were numerous times in the past years that I pointed out my research adviser and colleague's mistakes and convince them with clarifying explanations. The teaching award and several research awards/grants that I received have also proven my excellent abilities in verbal and written presentations. I also possess great leadership and task management skills as I had an 11-month military experience in Taiwan with the last 6 months appointed in a leadership role.

I am very excited about the *Quantitative Research Analyst* position and the prospect of leveraging my experience and skills in this role. It would be my pleasure to speak with you regarding my background and the responsibilities of this role. Please do not hesitate to contact me for an interview if you think my skills and qualifications align with your needs. Thank you very much for your time and consideration.

Yours faithfully,

Cheng-Hsien Li

Attached: resume

Li, Cheng-Hsien

Cell: (612) 8174996 • Email: cheng.hsien.li.career@gmail.com • LinkedIn: https://www.linkedin.com/in/chenghsienli

Summary of Qualifications

- Strong problem-solving skills balanced with mathematical rigor and physical intuition.
- Proficient in numerical computation and data analysis with multiple programming languages.
- Excellent skills in verbal and written communication with experts and non-experts.
- Passionate about and capable of learning new ideas and technologies in depth.

Education

- **Ph.D. in Physics** , University of Minnesota [GPA: 3.75/4.00 & Dissertation Link] Sep. 2017
  - ▷ Recipient of the *2011 Outstanding Teaching Award* from the School of Physics and Astronomy.
- **B.S. in Physics** , National Tsing Hua University, Taiwan [GPA: 3.30/4.00] 2008
  - ▷ Recipient of two research awards from the Physical Society of and National Science Council of Taiwan.

Quantitative Experience

- **Part-time Quantitative Risk Analyst at Numeraxial LLC** since Mar. 2017
  - ▷ Prototype and document a credit value at risk calculation for corporate bonds.
  - ▷ Identify principal components of economic indicators for further study of their relation to stock returns.
  - ▷ Research, assess, and recommend quantitative methods of relevance to the firm's problems.

Programming Experience

- **C/C++**:
  - ▷ Implemented Monte Carlo simulations for goodness-of-fit test and maximum likelihood estimation.
  - ▷ Developed an adaptive solver for a system of complex ODEs to study neutrino evolution problems.
  - ▷ Applied the GNU Scientific Library to performing standard and ad-hoc numerical tasks.
- **Matlab**:
  - ▷ Implemented linear/logistic regression, principal component analysis, support vector machine, neural network, and model validation for machine learning problems (Coursera certificate: SR695GRCE6M2).
  - ▷ Produced high-quality figures to visualize data from scientific computation for thesis work.
- **Python**:
  - ▷ Automated compilation of C/C++ code or LaTeX template in UNIX environment.
  - ▷ Implemented double exponential smoothing method (time series forecasting) with the SciPy stack.
  - ▷ Built an integration-preserving spline fitting function for temporal disaggregation of GDP data.

Academia Experience

- **Graduate Research Assistant at University of Minnesota** 2013 - 2017
  - ▷ Performed statistical analysis on a sparse data set from the SN1987A observation.
  - ▷ Derived a 3D PDE solution for neutrinos and studied its quantum-mechanical implications.
  - ▷ Received four grants to present at domestic/international conferences and first-authored two articles.
- **Graduate Teaching Assistant at University of Minnesota** 2010 - 2013
  - ▷ Identified students' conceptual difficulty and effectively communicated with the professor.
  - ▷ Organized weekly meeting and TA duty assignment as the lead TA in the teaching team.
- **Undergraduate Research Assistant at National Tsing Hua University** 2006 - 2008
  - ▷ Engineered a microwave component and resolved an experimental anomaly via simulation.
  - ▷ Coauthored three journal and conference papers and presented at National Science Council of Taiwan.

Leadership Experience

- **Second Lieutenant in Taiwanese Air Force (compulsory service)** 2008 - 2009
  - ▷ Coordinated and prioritized the company's operation under time pressure as the duty officer.

Other Technology Skills

Linux, Windows, LaTeX with its presentation package, Mathematica, Microsoft Office