**CHING-CHENG, HSU**
**Louisiana State University**
**Department of Physics & Astronomy**
**202 Nicholson Hall, Tower Dr.**
**Baton Rouge, LA 70803-4001**
**(225) 262-9174**

July 27, 2015

Citi Bank
Long Island, NY

To Hiring Manager:

I am writing to applying for the position of **"Data Scientist, Global Analytics & Insights"** as advertised on the *Indeed Webpage*. I currently hold the position of research scholar at LSU, USA. I believe that I have a combination of experience and extreme enthusiasm that will make a significant contribution to your company's Research & Development activities.

During several years of research in several eminent academic research institutes around the world, I have been consistently exposed to many high quality science. My professions have built a very broad spectrum in different fields of experimental astrophysics, from physics simulations, time series analysis to big data physics modeling and digital signal processing. Being trained as a physicist, I have acquired deep knowledge of statistics and the programming skills to solve the complex problems. My experiences in couple of famous laboratories earn me quickly having top-level thinking about the problems from basic physics principles and realize them into experiments in the lab or computer programming algorithms. I own couple of relevant skills which are important for this position:

- More than 5 years of serious C++/Python developing experiences and used to be involved in computing intensive academic projects.

- PhD in particle astrophysics, strong skills on statistics and mathematics. Familiar particularly with time series analysis and machine learning algorithms.

- Enjoyed and used to research environments and love to be a team player. Like to talk to and learn from colleagues.

- Proven academic publication records on astrophysical time series data analysis and is invited to be in editorial board of dataset paper in science.

- Willing to learn new things from all different sources and have a strong track record of developing new researches, knowledge and disseminating them to the other members of the team.

- Being working with big international collaborations during my academic period, I have been able to demonstrate excellent team work and communication skills.

- Scientific-driven thinking with user/business-oriented mind.

I used to model physics systems using computer codes and enjoyed a lot of fun. The "Big Data" age is coming and it is an exciting moment to be part of it. I am ready to go and would like to work in an exciting and challenging industry. I believe *Citi Bank* has proven records of excellence in finance research and will provide me a good opportunity to develop myself. The most of all, it allows me to contribute in relevant fields which all human beings can profit from that. I like to do things which really matter. It is such a force that drives me self-motivated and continuously making progress.

I am very much looking forward to having the opportunity to discuss my application with you in more detail. I have enclosed my CV. Supplement materials will be provided if requested. I will be available for an interview anytime if it is scheduled in advanced. I appreciate if you could first send me emails or a short call, then we can have further interviews and discussions. Thank you very much. I am looking forward to hearing from you soon.

Yours faithfully,


Ching-Cheng, Hsu

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# Ching-Cheng Hsu

*Curriculum Vitae*

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*Physics & Astronomy Department*
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*Baton Rouge, LA 70803-4001*

## VISA Information

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|---|---|
| Citizenship | **Taiwan** |
| VISA Status | **Green card holder since July 2015** |

## Experiences

**03/2013-Current** **Research Scholar**, High Energy Astrophysics Lab, Louisiana State University , USA.
- Developed C++ simulation codes on atmosphere gamma-ray flash study.
- Developed Python Analysis codes on photon sensor data.
- Completed analyzing $\gamma$-ray satellite data in LSU high performance computing center.
- Developed C++ statistical time series analysis and mathematical models on the satellite data (NASA Grant).

**01/2012-02/2013** **Einstein Postdoc Fellow**, University Bern, Switzerland.
- Managed a C++ and Qt data acquisition GUI software for cryogenic detector system.
- Developed a maximum likelihood methods in C++ and Python to analyze nuclear physics big data set.

**04/2009-12/2011** **Postdoc Researcher**, NIKHEF[a], The Netherlands.
- Developed neural network algorithms (Multi-Layer Perception) in C++ for event/background discrimination.
- Developed a statistical method in C++ to better model the huge measured data.

**12/2008-02/2009** **Visiting Scientist in Astrophysics**, DESY[b], Germany.
- Developed C++ and Python software on $\gamma$ ray and multi-wavelength correlation studies.

## Mentoring/lecturing Experience

**02/2013** Invited lecturer for Particle Physics Simulation&Computing winter school 2013, Taiwan

**02/2012-01/2013** Lecturer of two courses: **Astroparticle physics** and **Experimental Particle physics**, University Bern, Switzerland

**02/2012** Invited lecturer for Particle Physics Simulation&Computing winter school 2012, Taiwan

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[a] NIKHEF: Dutch National Particle Physics Institute.
[b] DESY: German National Particle Physics Institute.

# Education

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| 11/2005-<br>12/2008 | **PhD in High Energy Astrophysics**, *Max-Planck-Institute for Physics and Ludwig Maximilian University of Munich (LMU), Munich, Germany.* |

○ Thesis Title: **Long Term Monitoring on Mrk421 $\gamma$ ray Emission with MAGIC Telescope**. Grade:**magna cum laude**
○ Developed numerical and statistical methods on analyzing 4 years of telescope data.
○ Developed a **Online Trigger visualization** software using QT and C++.
○ Calibration and characterization on photon sensor

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| 09/2002-<br>08/2005 | **PhD Candidate (Quit at 2005, moved to Germany)** , *National Taiwan University* , Taipei, Taiwan. |

○ Developed Python software for detector and trigger simulation.
○ Worked in Hawaii 6 months on imaging intensifier data analysis.
○ PC farm and cluster administration.

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| 09/2000-<br>08/2002 | **Research Associate**, *Academia Sinica*, Taipei, Taiwan. |

○ Completed a webpage design for the institute, using CSS and HTML.
○ Modified a software (Fortran) about simulating particle horizontal showers.

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| 10/1998-<br>08/2000 | **Taiwanese Navy Service**. |

An obligatory service for every man in Taiwan for 22 months.

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| 09/1996-<br>07/1998 | **Master Degree in Nuclear Physics**, *National Taiwan University/Academia Sinica* , Taipei, Taiwan. |

○ Thesis: **Liquid Scintillator R&D for Reactor Neutrino Studies and Monitoring.**

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| 09/1992-<br>07/1996 | **Bachelor Degree in Physics**, *National Taiwan University* , Taipei, Taiwan. |

# Computer Skills

Languages C, C++, Python, C++11, C++ STL, BASH script, LATEX, FORTRAN77, R, MySql

Platforms Unix, Linux, Windows, Arduino, Solaris

Tools
○ **Image Processing:** Gimp, Photoshop, OpenCV(C++ and Python version), Python Image Library(PIL)
○ **Scientific Computing:** AstroPy, NumPy, SciPy, C++ STL, Ipython, pandas, MPI(C++ version)
○ **Machine Learning:** TMVA(C++), Scikit-learn (Python),
○ **Physics Simulation:** GEANT4, ROOT, PAW, CORSIKA (cosmic ray), FLUKA(particle interaction).

Projects
○ Time series modeling and prediction on astrophysics systems.
○ Applied neural network on pattern recognition.
○ Simulation and modeling of particle interactions and detector design.
○ PC farm administration.
○ Reconstruction on particle tracks, sky image and morphology.
○ Image reconstruction.

| Fun Projects[c] | ○ How to select good detectors for a TGF experiment ? |
| | ○ Analysis of 5 years of "The Times world good university ranking". |
| | ○ Analysis of high skilled American immigration application data from trackitt.com |
| | ○ Do the people of the same race live close by ? A simulation study on the Thomas Schelling's agent-based model |

## Hardware Skills

| Projects | ○ Building computer farms, clusters. |

## Academic Honors

| 2004 | **Thousand-Mile-Horse Fellowship for outstanding PhD student** |
| | ○ This fellowship is nominated every year for few students in Taiwan who can study abroad for one year. I stayed in University of Hawaii. |
| 2006 | **Max-Planck society PhD Fellowship** |
| | ○ This fellowship is nominated every year for few students around the world who are talented in particle physics. |
| 07/2012-current | **Editorial Board of Dataset Papers in Physics, Astrophysics section[d]** |
| | ○ I am invited to be in the editorial board of a peer-review journal since 2012. |

## Academic Publications

My scientific contributions have been published in numerous peer-reviewed journals. Please check my google scholar page[e]

## Languages

| Mandarin | **Mother Tongue** |
| Taiwanese | **Mother Tongue** |
| English | **Fluent** |
| German | **B1 level** |

## Personal Webpage

| twitter | **https://twitter.com/supernova_cchsu** |
| Linkedin | **https://www.linkedin.com/pub/ching-cheng-hsu/56/63b/675** |
| Blog | **http://mydataphoon.blogspot.com/** |

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[c] I like selecting interesting web data to mine and model in my leisure time.
[d] Dataset Papers: http://www.datasets.com/journals/physics/editors/astrophysics/
[e] My google scholar: http://scholar.google.com/citations?user=JYAZl4IAAAAJhl=en