

# Yi-Der Lin

Austin, TX

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- Ph.D. level theoretical physicist with background in Data Science, Programming, Model Building, Dynamical System, and Chaos Theory.
  - Languages include C, bash, Python, Mathematica, Matlab, R, Fortran.
  - Computer platforms include Unix/Linux and MPI.
  - Analytical techniques include K-Means, Bayesian inference, HMM, Hierarchical Clustering.
  - Willing to absorb new concepts, self-motivated, elaborate ideas, think outside the box.
  - Work in various environments and develop strong collaborative relationships.
- Sponsorship required to work in the US

## WORK EXPERIENCE

### Research Assistant

University of Texas at Austin - Austin, TX - September 2009 to Present

#### Responsibilities

- Used MPI (100+ nodes) to generate huge collision data set (equations of motions contain 100,000 lines in C), and wrote shell scripts to manage results automatically.
- Applied dynamical theory to extract key patterns of chaotic structure, designed "Echoes" for chaotic control, tools include Fractal dimension, Symbolic Dynamics, Entropy, etc.
- Volatility analysis on S&P500 (Mixture Gaussian) and pattern recognition by HMM. (project)
- Build up a Dynamical Social Network Trading model inspired by Turing machine that simulated bearish and bullish investors. (project)

#### Skilled Used

C, Bash, Unix/Linux, Dynamical System, Scientific Programming, Statistics, Data Mining, Mathematical Physics.

### Research Assistant

Academia Sinica - 台北市 - June 2007 to August 2009

#### Responsibilities

- Modeling coarse-grained simulations of DNA on cluster machines, managed huge data set, implemented the algorithm of electrostatics (Ewald summation) for long range interactions, expanded the original code of Lattice Boltzmann Methods (Fluid simulation). (1 year)
- Coordinated the observed ozone data from NASA within different formats, compared data to modeled results, and applied Time Delay method for data analysis. (1 year)

#### Skills Used

C, Bash, Unix/Linux, Molecular Dynamics, Scientific Programming, Mathematical Physics.

## EDUCATION

### M.Sc. in Physics

National Taiwan University

2003 to 2005

**B.Sc. in Physics**

National Taiwan University

1999 to 2003

**Ph.D. in Physics**

University of Texas at Austin - Austin, TX

2009

**SKILLS**

Linux

Physics

Fourier Optics

Chaos Theory

C

Python

Statistical Analysis

Data Mining

Scientific Programming

HMM

MCMC

Clustering

Regression

Cellular Automata

Molecular Dynamics

Lattice Boltzmann

**LINKS**

<https://www.youtube.com/watch?v=DQgbG-ED6O4>