Tae Geun Kim

Graduate Student

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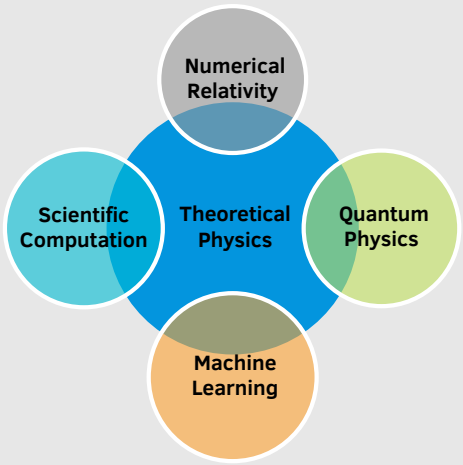
Knowledge

Overview



Programming

$0\ LOC$ ——————→ $5000\ LOC$

Rust

Go • Haskell • D

Python • Julia • Scala • R • Chapel

C • C++ • Nim • Elixir

Education

PhD. Candidate, Physics
Specialization: Particle Physics
Yonsei University
2017 - | Seoul, South Korea

BSc., Astronomy
Yonsei University
2012 - 2017 | Seoul, South Korea

Research Interests

Numerical relativity, Scientific computation and Machine learning for High energy physics.

Experience

Mar 2017 - Present — **Web Assistant** — College of Science, Yonsei Univ.

- Developed and maintained new web page of College of Science, Yonsei University with flask.
- Main work: Debugging and data uploads
- Tool: Apache, CSS, JS, Flask, MySQL

Mar 2017 - June 2017 — **Teaching Assistant** — Yonsei Univ.

- TA for PHY4205-01 (Mathematical Physics(1))
- Main work: Delivered several lectures for general relativity and Scoring
- Adviser: Seodong Shin, Dept. of Physics, Yonsei Univ.

Mar 2016 - Feb 2017 — **Undergraduate Intern** — Yonsei Univ.

- Studied quantum field theory, general relativity and performed several projects.
- Projects: Practice of HEP calculation tools with ϕ^4 theory
  Tools: MG5_aMC, CalcHep, Mathematica
- Adviser: Seong Chan Park, Dept. of Physics, Yonsei Univ.

Educational Experience

2019 — **Schools**

- **2019 APCTP-NIMS-KISTI-UNIST-KASI Summer School on Numerical Relativity and Gravitational Waves** (APCTP, 24-28 June)

2018 — **Schools**

- **The 9th KIAS CAC Summer School on Scientific computing and Machine learning** (KIAS, 26-29 June)

2017 — **Schools**

- **The first MadAnalysis 5 workshop on LHC recasting in Korea** (KIAS, 20-27 August)
- **2017 Summer School on Cosmology and Particle Physics** (IBS-CTPU, 7-11 August)

2016 — **Schools**

- **2016 Winter School on Cosmology and Particle Physics** (IBS-CTPU, 12-23 December)
- **KIAS-QUC Winter School on Collider Physics** (KIAS, 26-29 December)

2015 — **Schools**

- **Yangpyeong Particle Physics School** (KIAS, 17-20 December)

Honors and Awards

Aug 2017 - Dec 2017 — **IBS Student Fellowship** — IBS CTPU

Programming Projects

Sep 2018 - Present **Peroxide** crates
Rust numeric library with easy syntax

- Rust numeric library contains linear algebra, numerical analysis, statistics and machine learning tools with R, MATLAB, Python like macros.
- Tools: Rust, Cargo, Travis CI

Jul 2018 - Sep 2018 **DNumeric** dub
D numeric library with R syntax

- D numeric library for linear algebra and statistical programming with R syntax.
- Tools: D, dub

May 2018 - Jul 2018 **HNumeric** hackage
Haskell Numeric Library with pure functionality, R & MATLAB Syntax.

- Haskell numeric library implemented by pure functional paradigm.
- Tools: Haskell, Stack, Cabal, Travis CI and Hackage CI

Jan 2018 - Dec 2017 **Hepframework** docker hub
High Energy Physics Tools on Fedora 27

- Docker container for High energy physics tools.
- Tools: Docker, Jupyter, Shell script
- HEP Tools: CERN-ROOT 6, MG5_aMC, CalcHEP, MicrOmegas, Opti-Mass

May 2017 - Nov 2017 **Yonsei HEP-COSMO Web page** Yonsei HEP-COSMO

- Laboratory web page with Django & Linux server
- Tools: Django, Apache, MySQL

Aug 2017 - Oct 2017 **RGE** github
Go & Julia package to solve Renormalization Group Equation

- Golang Package which solves RGE & generates plot with Julia.
- Tools: Go, Julia, Glide

Additional Skills

- Machine Learning
  - Statistical Learning with R, Rust and Julia.
  - Deep learning with Torch
- Web programming
  - Front-end with Vue.js (BaaS with Firebase)
  - Full-stack with Django
- Scientific Computing
  - Implement lots of algorithms from scratch for various languages.
  - Marsaglia, ziggurat methods for RNG, explicit, implicit ODE solver and etc.
- Documentation
  - LaTeX, pandoc, R markdown, RemarkJS, Jupyter notebook