Hitham Hassan

Ph.D. Candidate | Software Developer | Data Scientist
hithamh@live.com

LINKS

LinkedIn: **hitham-hassan**
Github: **Hitham2496**
Website: **hitham2496.github.io**

SKILLS

Technical Skills

Experienced:
C/C++ • Python • CI/CD • Git Linux/Unix • Bash/Shell • OOP • LaTeX• Data Science • Software Development

Familiar:
Machine Learning • HTML • CSS

Professional & Interpersonal Skills

Science Communication• Confident Presentation• Management • Leadership • Strong Work Ethic • Time Management • Teamwork • Problem Solving

OUTREACH

RESEARCH EXPERIENCE

PH.D. CANDIDATE IN THEORETICAL PARTICLE PHYSICS

IPPP, Durham University
Oct 2019 - Present
First year examination results: 99.5%

- **Developing software** implementation of a merging procedure for high energy (with `HEJ`) and soft-collinear resummation (with Pythia).
- Using **C++** to develop applications for use on **high throughput computing** systems following a **test-based** approach.
- Working in the **Linux/Unix** environment and with version control in `GitLab` with **continuous integration** to streamline the development process.
- Using **Python** to interpret **data structures** in predictions made with High Energy Physics (HEP) software and perform **statistical analyses** of the results.

M.SCI NATURAL SCIENCES IN MATHEMATICS AND PHYSICS

Durham University
Oct 2015 – July 2019
Classification: First Class Honours
Thesis: *Jet Multiplicity Measurements at the LHC*

- Integrated Masters degree in mathematics and physics, specialised into **theoretical** and **computational particle physics**.
- Topics include: **Numerical Analysis**, Probability and **Statistics**, Partial Differential Equations, **Analysis in Many Variables**, Complex Analysis, **Quantum Computing** and Optics, Quantum Field Theory, Condensed Matter Theory.
- Awards include: New Student of the Year (2015), Ranald Michie Prize (2016), Principal's Award for Outstanding Contribution to College Life (2019).

SUMMER RESEARCH STUDENT

IPPP, Durham University
Jul 2018 – Aug 2019

- **Awarded** one month studentship at the IPPP, Durham producing predictions for Higgs boson production at the LHC with the `Sherpa` **Monte Carlo**.
- Produced sophisticated tools in **Python** to **pre-process** the data as **images**.
- Produced simple **machine learning** analysis in **Python** (w/ `sklearn`) to classify the production mechanisms of the Higgs with promising results.

PRESENTATIONS

DIAGNOSING ISSUES IN SOFTWARE/CODE DEVELOPMENT

Aug 2022 | IPPP Computing Seminar Series, Durham University
Presentation Material Available

ALL-ORDER MERGING OF HIGH ENERGY AND SOFT-COLLINEAR LOGARITHMS

Aug 2022 | ISMD 2022, Pitlochry, Scotland
Presentation Material Available

PYTHON PROJECTS AND UNIT TESTING

Feb 2022 | IPPP Computing Seminar Series, Durham University
Presentation Material Available

DEBUGGING C++ WITH `GDB`

Nov 2021 | IPPP Computing Seminar Series, Durham University
Presentation Material Available

JET MULTIPLICITY MEASUREMENTS AT THE LHC

Nov 2019 | St. Cuthbert's Society Research Forum, Durham University

PUBLICATIONS

ALL-ORDER MERGING OF HIGH ENERGY AND SOFT-COLLINEAR RESUMMATION

Expected end 2022