

Jarosław Ciba

Email: jaroslaw.wiktor.ciba@gmail.com

<https://www.linkedin.com/in/jaroslaw-ciba/>

Mobile: +447577268070

<https://github.com/Elfikk>

Education:

Imperial College London

MSci Physics with Theoretical Physics

Oct 2020 – June 2024

- Currently in Year 4, on track for a first.
- On the Dean's List in Year 1 and Year 2.

St Dominic's Sixth Form College

Aug 2018 – June 2020

- A* in Physics, Computer Science, Mathematics, Further Mathematics.
-

Academic Experience:

BSc Project: Grey Wolf Optimisation for Neutrino Physics

Jan 2023 – May 2023

Implemented the Grey Wolf Optimiser (GWO), a type of swarm optimisation algorithm, to probe its potential use for minimisation of the 170-dimensional T2K near-detector likelihood.

- Implemented the GWO algorithm in Python.
- Tuned its hyperparameters, developing visualisations to understand the behaviour of the algorithm for sets of test functions with varying characteristics, to choose a set of hyperparameters used on the ND280 likelihood.
- Implemented the GWO algorithm in C++ and ran it on the T2K framework.
- Displayed

Investigating Rare b -meson Decay at LHCb (Final Mark: 75%)

Oct 2022 – Dec 2022

Worked in a group of 25 students, investigating CP violation by focusing on two B^0 decays.

- Led the Machine Learning subgroup, in charge of classification of signal against combinatorial and peaking backgrounds in the total dataset provided.
- Developed a Scikit-Learn Random Forest classifier and tuned its hyperparameters, producing comparable results, in terms of the number of detected events, to the final Boosted Decision Tree model used in analysis.
- Presented the Machine Learning subteam's work to an audience of 100 students and assessing professors as part of the team's final 30 minute presentation.
- Recognised by my peers for my individual effort, earning a 13% increase via peer assessment to my final mark relative to the group mark (group mark not published at this time).

Modelling the Activity of a Radioactive Source (Final Mark: 84%)

Feb – Mar 2022

Lab work with a lab partner over the course of four weeks, performing measurements on the activity of a Strontium-90 radioactive source.

- Investigated absorption of Beta radiation in different media (air, copper, aluminium) with distance.
- Verified results via Monte Carlo simulation, using Geant4 software.
- Developed a model for the activity of the source with distance, considering the geometry of the setup (source and detector), the dead-time of the detector and the absorption of Beta radiation in the air. This improved the reduced χ^2 value from an initial point source model's value of 5.36 to a value of 0.85.
- Summarised and presented my model and findings in a 4-page scientific-style report, earning a mark 84% overall.

Programming Projects:

Minesweeper Solver

- Wrote the game from scratch, using an object-oriented approach, with interactivity built in pygame.
 - Trained a DeepQ agent with TensorFlow 2 to solve the game.
 - Implemented a deterministic solver using Gaussian elimination and back solving.
 - Implemented a heuristic probability-estimating algorithm to handle guessing in non-deterministic scenarios.
- Tech: Python3, pygame, TensorFlow 2, numpy, matplotlib

TTS Newsreader

- Used a BeautifulSoup web scraper to pull the latest news from Sky News.
 - Used tf-idf and NMF to analyse subjects of scraped news.
 - Wrote a user system, storing user's opinions on proposed news articles in text files, to recommend articles most relevant to them.
 - Used pyttsx3 to read out recommended news to the user.
- Tech: Python3, bs4, sklearn, pyttsx3, numpy, pandas

Pathfinding Visualisation

- Implemented a Mininum Heap, verifying results using unit testing, to make an efficient priority queue for A*.
 - Implemented A*, Dijkstra's and greedy pathfinding algorithms for a 2D grid.
 - Wrote a visualiser of these algorithms in Pygame, allowing users to add obstacles to the path and editing start/end points on the grid.
 - Implemented a PyQt5 GUI for changing grid size at run-time and resetting the grid.
- Tech: Python3, Pygame, PyQt5, unittest
-

Student Societies:

Lighting Director of the Imperial College Dramatic Society

- Responsible for maintenance of lighting equipment, including 40 moving heads, as well as overseeing lighting on all DramSoc events. DramSoc puts on theatre performances and provides audiovisual support for 50 other Imperial student societies, including plays, concerts and club nights.
- Regularly working in large production groups over multiple weeks to put together large performances. I am currently Lead Lighting Designer on DramSoc's 2023/24 main show, Romeo and Juliet as well as the Production Manager and Lead Lighting Designer of Musical Theatre Society (MTSoc) Autumn Show "Revue".
- Designed and ran the tech (lights + sound) for our visit to the Edinburgh Fringe in August 2022, after picking up necessary software over a couple of weeks (Capture, PhantomZerOS, QLab).
- Assistant Lighting Designer and Light Operator for Earthquakes in London, DramSoc's main show of 2022/23.

Chair of the Tea Society at Imperial College

- Responsible for the overall running of the Tea Society at Imperial, a 40-member strong social club centred around tea tasting.
- Primarily responsible for bureaucratic side of running the society, from risk assessments to tracking expenses, as well as representing the society in management group meetings.
- I organise regular committee meetings to ensure the smooth running of the group.
- Previously held the role of the Tea Officer, where I was responsible for organising biweekly sessions for members in the 2022/23 academic year, as well restocking supplies (tea, biscuits, cups).

Treasurer of the Bridge Society at Imperial College (2021/22 academic year)

- Responsible for week to week finances of the society, updating the society's budget for 2022/23 accordingly.