

# Luka Mdivani

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## EDUCATION

### Duke University & Duke Kunshan University (DKU) Dual Degree

*Bachelor of Science in Data Science (by Duke Kunshan)*

Kunshan, China

*Bachelor of Science in Interdisciplinary Studies (Subplan: **Data Science**) (by Duke)*

Durham, NC, USA

- Full Tuition Merit-Based Scholarship, Dean's List : Fall 2021. GPA: 3.67 / 4.00.
- Coursework: Machine Learning, Computer Vision, Data Structures and Algorithms, Data Analysis, Data Visualization, FinTech, NLP.

## PROFESSIONAL EXPERIENCE

### Data+ Research - Computer Science Department at Duke University

May 2022- July 2022

*Data Scientist Intern*

Durham, U.S.A

- Performed Data processing for 300GB drone captured data: orthophotographs, contours and LiDAR digital surface models (DEM).
- Automated data analysis and visualization using Python scripts, reducing processing time from 2 weeks to 1 hour per archeological site.
- Trained and tested an U-Net image segmentation model to identify archaeologically important landscape features, achieving a precision-recall AUC of 0.25 (baseline 0.07).
- Created and documented an advanced methodology for data collection, labeling, analysis, and visualization pipeline.

### Advanced Software Design - Computer Science Department at Duke University

Sep 2022- May 2023

*Teaching Assistant*

Durham, U.S.A

- Mentored 5 students per term in applying design patterns and writing clean and efficient code for advanced software engineering projects.
- Assessed functionality and quality of group projects, evaluating individual student contributions and team performance.
- Taught course concepts such as Inheritance Hierarchies, Encapsulation, Dependency Inversion, Lambda Expressions, Design Patterns, Unit Testing, and clean coding techniques.

### Resident Assistant for Duke East Campus

Aug 2022- May 2023

*Resident Assistant*

Durham, U.S.A

- Supervised and managed a community of 40 undergraduate students, handling conflict resolution, organizing events, and providing support and resources.

## RESEARCH EXPERIENCE & PROJECTS

### Research in Feature-free Algorithm Selection for Function Optimization

May 2022-March 2023

*Student Researcher, Duke Kunshan University*

Durham, U.S.A

- Proposed a unique image classification based approach to the Algorithm Selection (AS) problem where the intervention of a field specialist for optimizing product pipelines.
- Conducted extensive literature review on existing AS models.
- Built a CNN for image classification which extracts features from 3D function visualizations to perform AS, some results twice outperform traditional AS methods.

### CompSci 307- Advanced Software Design Projects

Spring 2022

- In a team of 3 people, developed a software for simulating different advanced cellular automata as well as a GUI for visualizing them, built the frontend using JavaFX.
- Implemented a GUI for a simplified version of Logo language(turtle graphics).
- Created a game customization environment (rulesets, maps and pieces) for a robust 2D board game engine inspired by Battleship. Wrote classes for part of the engine and frontend along with a team of 9.

### Chess Engine

Summer 2021

- Developed a fully playable chess game from scratch.
- Implemented an efficient algorithm for the rules of chess, tested up to the depth of 84,000,000 nodes.
- Implemented a simple AI Bot and a game evaluation system. Added support for OpenCV hand tracking based system, enabling players to move pieces on screen with hand gestures.

## SKILLS

### Programming Languages

Python, Java, C++, MATLAB, R and SQL.

### Data Science/ML Skills

ETL, Data Visualization, Deep Learning, Regression, Statistics, Neural Networks, NLP.

### Software Engineering Skills

Project Planning, Advanced Design Patterns, Git, OOP, Dependency Management, Unit Testing.

### Data Science Libraries

NumPy, Pandas, SciPy, scikit-learn, Tensorflow, Seaborn, Matplotlib, PyTorch, OpenCV.

### Analysis Software

Tableau, Excel.

### Languages

English(*Fluent*), Georgian(*Native*), Chinese(*Intermediate*) and Russian(*Intermediate*).