

Mostafa Mahmoud Kamal

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Projects

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| 06/2022 – present | Lox ↗ <ul style="list-style-type: none">• A python-like hobby programming language• Support for imperative, OOP and functional programming paradigms• Interpreter written in Kotlin |
| 06/2022 – 07/2022 | PDF Indexer ↗ <ul style="list-style-type: none">• A PDF parser/indexer that creates an inverted word index out of a PDF file• Support for partial indexing: indexing a group of pages into a separate index.• Highly customizable output format |
| 03/2022 – 06/2022 | Pure Engine ↗ <ul style="list-style-type: none">• A High performance C++ 3D game engine, wrapping OpenGL• OOP framework based on the Entity Component System (ECS) design pattern• JSON deserialization for all game assets• Cross-Platform build based on Cmake |
| 02/2022 – 04/2022 | Modern Regex ↗ <ul style="list-style-type: none">• A C# library that abstracts low-level regex strings in high-level fluent API• Specify a regex declaratively using a builder tree• Compiles to regex strings, no performance overhead |
| 11/2021 – 02/2022 | Highway Vehicle Detector ↗ <ul style="list-style-type: none">• A Machine Learning system that detects and tracks moving vehicles in video footage• Uses Support Vector Machines trained on a Histogram-Of-Gradients and SIFT as features. |
| 10/2020 – 01/2021 | Space War ↗ <ul style="list-style-type: none">• A remaster of the 1960s classic game in 16-bit x86 assembly with a chat feature |

Education

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| 2018 – present | Computer Engineering, Cairo University
Senior Student, Excellent Grading: 88% accumulative, 3.7/4 GPA. |
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Languages

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| • English | • Arabic |
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Programming Languages

- C • C++ • Python • Java • C# • F# • Kotlin • Groovy • Ruby • Haskell
• Tcl • Raku • Javascript • Bash • PowerShell • SQL • x86 Assembly

Courses

07/2020 – 09/2020

IBM AI Analyst, IBM [!\[\]\(3dfb8d66e81160ad61421a3452093d1b_img.jpg\)](#)

- Studied a variety of AI techniques and algorithms under the supervision of IBM employees
- Passed the final test with a +90% grade

Software Skills

- Object Oriented Programming
- Functional Programming
- Command Line Scripting
- Databases
- Git and Github Version Control
- Data Structures, Algorithms, and Problem Solving
- Machine Learning
- Test-Driven Development
- Agile Development

Extracurricular

09/2020 – 02/2022

Cairo University STP Student Activity, CS Instructor

- Mentored a group of more than 40 students of diverse experiences and backgrounds
- Taught the participating students the basics of programming in C++ and Python.
- Supervised the students' projects, a simple game in Python using the library pygame for graphics, sound and input controls.

08/2020 – 01/2022

Cairo University Racing Team, Low Voltage Sub-team Member

- Designed the data collection sub-system onboard the racing vehicle.
- Coded a prototype in embedded python (Raspberry Pi) to test the correct operation of the system.