The Holberton Way

Holberton

Holberton – the Secret Sauce

- Curriculum
- Software
- Methodology
- Values

Curriculum

- Developed by professionals
- Gap in education & industry needs
- Consistent iteration & difficulties
- We got your back

CURRICULUM

SOFTWARE

METHODOLOGY

VALUES

Software

- Automation
- Consistent + high quality
- Learning curve
- Scalable

SOFTWARE

CURRICULUM

METHODOLOGY

VALUES

Methodology

- The framework
- Challenges -> Growth
- Active participation
- Peer to peer learning
- Project-based learning

CURRICULUM

SOFTWARE

METHODOLOGY

VALUES

Values

- **Teamwork**
  - Can't get through alone
  - Collaboration + empathy
- **Grit**
  - Marathon not a sprint
  - Dedication, perseverance, + courage
- **Kindness**
  - Break the toxicity
  - Personal growth
  - Make the world better
  - Positive, inclusive environment

CURRICULUM   SOFTWARE   METHODOLOGY   VALUES

The Framework

- A process to work through problems
  - For both students and staff
- Can be used on any problem
- Support

Peer Learning

- Working together to understand concepts and solve problems
- Days specifically for structured project reflection

1. **Read**
2. **Think**
3. **Think more + whiteboard**
4. **Ask why**
5. **Read the error messages**
6. **Google it**
7. **Google again**
8. **Ask a peer**
9. **Ask more peers**
10. **Ask your ST**
11. **Ask more STs**
12. **Ask staff, advisors, alumni**

Foundations

T1 - Curriculum

Holberton Basics

- Community
- Rules
- Software/Checker
- Social Media
- Public Speaking

Technology Basics

- Intro to Tech
- Compilation
- Heap/Stack

C

- Basics
- Functions
- Pointers
- Data Structures
    - Arrays
    - Singly Linked Lists
- Bit Manipulation
- Variadic Functions
- Memory Management
- File Redirection
- Static Libraries

Linux

- Basics
- Permissions
- Redirections
- Syscalls

Milestone Projects

- printf
- Shell

T2 - Curriculum

Python

- Basics
- Object-Oriented Programming
- Interpreted Languages
- Test Driven Development
- Error Handling
- I/O
- Web Scraping

Algorithms & Data Structures

- More Data Structures
  - Stacks/Queues
  - Doubly Linked Lists
  - Hash Tables
  - Binary Trees
- Algorithms
  - Searching & Sorting
  - Big O

Web Development

- AirBnB Clone
  - HTML
  - CSS
  - Unit Testing
  - JSON

Databases

- SQL
- MySQL

Linux

- Processes and Signals
- Scripting
- Command Line

Systems Engineering

- Open Systems Interconnection Model
- TCP/IP

T3 - Curriculum

Systems Engineering / DevOps

- SSH, SSL/TLS, HTTP/S
- Webstack Debugging
- Web Servers (Nginx)
- Application Servers (Gunicorn)
- CI / CD (Jenkins)
- Docker
- Infrastructure as code
- Manage infrastructures (Puppet, Terraform)
- Automation with Ansible
- Load Balancers
- Networking
- Monitoring

Python

- ORMs (SQLAlchemy)
- Framwork (Flask)
- Templating (Jinja2)

Web Development

- AirBnB Clone (Continued)
  - Javascript
  - JQuery
  - Deployment
  - APIs
    - Flask

Special Projects

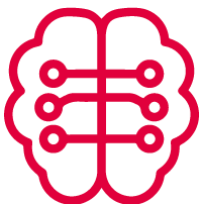- Code Debugging
- Hack Days (Mini Hackathons)

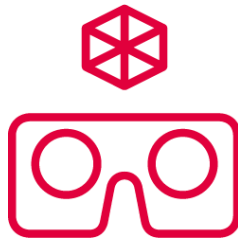## Portolio project

- Portfolio project (putting it all together)
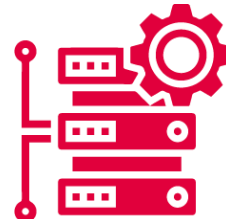
Specializations

Holberton Specializations

Long programs

Machine Learning

AR/VR

Low Level & Algorithms

Web Stack

Short programs

Front End

Back End

Machine Learning

Lead the Next Tech Revolution

- Self driving cars
- Voice controlled personal assistance
- Artificial Intelligence
- Computer vision
- Natural language processing
- Recommender system

Fundamental approaches
['

- Supervised learning, unsupervised learning, reinforcement learning, deep learning

Machine Learning Specialization

Math

- Linear algebra
- Plotting
- Calculus
- Probability
- Advanced linear algebra
- Multivariate probability
- Bayesian probability
- Convolutions and pooling

Neural Networks & Deep Learning

- Convolutional Neural Networks
- Deep convolutional architectures
- Neural style transfers
- Recurrent Neural Networks

- Transfer learning
- Time series forecasting
- Natural language processing
- Transformer Applications
- QA Bot

Supervised Learning

- Classification
- Optimization
- Error analysis
- Regularization
- Tensor
- Transfer learning

Unsupervised learning

- Dimensionality reduction
- Clustering
- Hidden Markov models
- Hyperparameter tuning
- Autoencoders

Machine Learning Specialization

Reinforcement Learning

- Q-Learning
- Deep Q-Learning
- Temporal differences
- Policy gradients

The Pipeline

- Pandas
- Data collection – APIs
- Databases
- Data processing
- Data augmentation
- ML life cycle

Portfolio Project

- Machine learning portfolio project

10-months

1650 hours

42 projects

# Our Machine Learning Engineer: Evis Plaku

Education

- **Ph.D Candidate in Artificial Intelligence**
    - Metropolitan University of Tirana

- **Research in Machine Learning**
    - C.U.A in Washington, D.C

- **M.Sc. in Artificial Intelligence and Robotics**
    - University of Freiburg, Germany

- **B.Sc & M.Sc. in Computer Science**
    - University of Tirana

Work Experience

- **Software Engineer & Education Lead**
    - Holberton School in Albania

- **Lecturer**
    - Metropolitan University of Tirana
    - Canadian Institute of Technology
    - Polytechnic University of Tirana
    - Albanian University
    - University of Freiburg, Germany (teaching assistant)

Our Campus: in the heart of Tirana
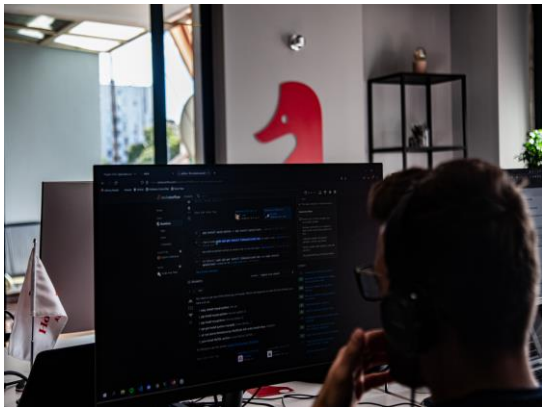
:

Our Campus: a community

:

Full Stack Web Developer

Web Development Master

- Streaming sites
- Online stores
- Own customized website
- Mobile applications
- State of the art tools & technologies

Fundamental technologies

[‘

- JavaScript, Python, React, Redis, MySQL, Node.js, SAAS

Key figures

9 -months

1450 hours

49 projects

Examples of projects

- Desktop and mobile applications
- MySQL performance debugging
- CRM dashboard

Full Stack Web Developer Specialization

Front-End

- Developer tools
- Advanced HTML
- Advanced CSS
- Sass & Scss
- Flexbox
- Forms
- Responsive design
- Implement a design from scratch
- Bootstrap
- JavaScript advanced
- jQuery advanced
- Cookies & local storage
- Build a web app in JavaScript

Back-End

- Python – Async comprehension
- Caching & Pagination
- Personal data
- Basic & session authentication
- User authentication
- Unit test and integration test
- Redis basic
- MySQL advanced
- NoSQL
- ES6 Basics, promises, classes, data manipulation
- Node.js
- Files manager

React

- Typescript
- Webpack
- React intro
- React props
- React component
- React inline styling
- React state
- React immutable
- React Redux action creator + normalizer
- React Redux reducer + selector
- React Redux connectors and providers

Augemented Reality
Virtual Reality

Augmented Reality / Virtual Reality

C#

- Hello world
- Conditions & loops
- Functions
- Data structures
  - Arrays, lists
  - Sets, dictionaries
  - Stack, queues
- Struct, enumerations
- Classes & namespaces
- Test driven development
- Inheritance
- Linear algebra
- Generics
- Interfaces
- Delegates, events
- Text-based interfaces

Unity

- User interface
- Unity concepts
- Scripting
- UI
- Publishing
- Assets: models, textures
- Animation
- Audio
- AR business card
- 360 video
- VR room
- AR Slingshot game
- Face detection
- Unity Shader graph
- Port translation

Special projects

- Image processing
- Unity: 2D game
- Ethical challenges in AR / VR

Portfolio project

- Full project (400 hours)

Thank You!