Margaux Masson-Forsythe

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EDUCATION

04/19 - 09/19 **Master Thesis:** Evaluation of Unbalanced-Weighted Multiclass Detection and Segmentation of Defects with Convolutional Neural Networks and Transfer Learning

2018-2019 **Oregon State University -- GPA: 3.51**
Master II Computer Science - Computer Graphics, Cyber security and Software development methods
Project: Parallax Assisted Depth-Map Platform - Generate a 3D model of the scene using a single camera on a moving platform.

2015-2017 **CPE Lyon, Graduate school for Chemistry/Chemical Engineering and Digital Sciences**
Department of Electronics Informatics and Telecommunications, third and fourth year of higher education
Majors: Image processing, computer vision, modeling and computing
Minors: Infographics, Economics, Psychology
Relevant courses: Electronics, Robotics, Telecommunications, physical science, applied mathematics (probability, statistics, numerical analysis) and signal processing

2013-2015 **PCSI: Physics, Chemistry, Engineering Sciences at Lycée Jeanne d'Albret**
2 years full-time higher education in preparation for competitive entry exams to grandes écoles
French high-level schools of science and engineering

2013 **Scientific baccalaureate at Lycée Alain**
French high school leaving diploma passed with honors, at

WORK EXPERIENCE

2019-present **Machine Learning Engineer at Lucidyne Technologies**
- Implement convolutional neural networks taking multichannel pictures as input
- Develop evaluation's solutions for Multi-classes CNN used for Semantic Segmentation
- Develop Deep Learning evaluation tools for unbalanced multi classes problems
- Implement automated scripts to save history of trainings, datasets and metrics in database (MySQL)
- Set up and use Docker containers for trainings
- Develop company personalized platform to manage (start/stop) trainings (Semantic Segmentation/Classification methods) on several training machines, visualize metrics, create datasets, etc

2020 **Publications Chair CVPR (Computer Vision and Pattern Recognition) 2020 - Seattle WA**
CVPR is the premier annual computer vision event comprising the main conference and several co-located workshops and short courses.

2020 **Volunteer website designer and team member of 1 Million Women In Stem (1MWIS)**
https://www.1mwis.com/
"1 million STEM women provides visible role models & inspire the next generation of girls"
- Creation of interactive map to display profiles from 1Million women in Stem website

2019 **Machine Learning Research Intern at Lucidyne Technologies**
- Use Deep fully convolutional neural network architecture for semantic segmentation
- Train unbalanced Multiclass Detection and Segmentation networks
- Implement evaluation for convolutional neural networks' trainings
- Use transfer learning
- Implement evaluation visualization tools using metrics
- Implement weighted metrics for the unbalanced multiclass issue

2017-2018 **Software Development Intern at Metadot - Daskeyboard Corporation**
- Implement of Desktop - Android applications
- Implement unit & e2e tests
- Creation of a REST API between server and keyboard
- Maintenance of websites / Firebase hosting and deployment
- Relation management and moderation: Q forum and mojo tickets

2016-2017 **Optional Internship at MysteryFX (post-production/VFX Studio)**
- Technical help during film shooting: setting up captors, cameras, lights, etc
- Nuke and Maya basis courses

2016 **Business creation project at CPE LYON**
Voice recognition washing machine for the visually impaired

07/ 2012 **Aerodrome (Beynes)**
- Maintenance of the gliders
- Flight courses / Meteorology and aerodynamics courses

PROJECTS

WATER SIMULATION OPENGL

The main purpose of this project was to implement a water/waves simulator using OpenGL. It thus involves implementing and manipulating 3D surfaces and normals, openGL functions, mathematical equations, texturing, lighting, and more.

GEOMETRIC MODELING

Shaders - GLSL
Helicopter animation
Texturing and Lighting

2D IMAGE TO 3D SCENE USING DEPTH MAP

Parallax Assisted Depth-Map: In this project the goal is to generate a 3D model of the scene using a single camera on a moving platform. The depth data is produced using several images from the scene and tracking multiple objects. This is done using traditional methods and enhanced using the parallax effect.

AUGMENTED REALITY GAME: VOLLEYBALL

Augmented reality game where the user can play volleyball against an opponent using the webcam and the user's hands. It is done by implementing control of 3D Objects from body posture or gesture.

COMPUTER SHADERS

Cube Mapping Reflective and Refractive Bump-mapped Surfaces
Step and Blended-edged Elliptical Dots / Noisy Elliptical Dots

SKILLS

ICT

PROGRAMMING

Python, C, C++, Linux, Git, Go, Flutter, Vim, Electron, Java, Javascript, yarn, npm, Typescript, Agile, Scrum, MySQL, Pycharm, tmux

MACHINE LEARNING

TensorFlow (1 & 2), Sklearn, Docker, Keras, Pytorch

MODELING / IMAGE PROCESSING

OpenGL, WebGL, GLSL, Matplotlib, OpenCV, Matlab

WEB DEVELOPMENT

HTML, CSS, Angular, Bootstrap, Android, Firebase, Jasmine, Karma, Wix

Languages

- French: native speaker
- English: fluent
- Chinese: basic knowledge (A1: HSK2)
- Spanish: basic knowledge (A1-A2)

Other certificates

- PCS1 (first aid), IELTS (C1)

EXTRA-CURRICULAR ACTIVITIES

Extra-Curricular Projects:

- Production Assistant of the short film *"Another Day"*
- Extra in the Lisa Belcher's short movie *« Guest of Honor »*
- 4L Trophy (2017) Team *4Lit'z Gaux!* / Ambassador of the Assocation *"Enfants du Désert"*
- Sunshine Race 10K
- Volunteer at the Fantastic Fest 2017 in Austin, TX
- Vice-president of CPE's photo/movie club (Shoot Time)
- Team Leader for the 48Hour Film Project 2016 (Team: *Group 21*) Director of the movie : "*Out Of Sound"*
- Scout Leader - Eclaireuses et Eclaireurs Unionistes De France (EEUDF)

Travel: USA (New York, Texas, California, Florida, Oregon, Washington), China, Kenya, Punta Cana, Malta, England, Spain, Italy, Belgium, Greece, Guadeloupe, Switzerland, Egypt, Poland, Germany, Romany, Austria, Morocco, Czech Republic, Canada (Vancouver, Banff)