Oussama SMAOUI
AI / ML Engineer

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in oussama-smaoui ⬡ osmaoui 🎓 Scholar

Innovative AI engineer with 4+ years of experience in research and development. Skilled in the entire AI development lifecycle, from ideation to deployment, with a focus on 2D/3D computer vision challenges. Completed a graduation internship at Ecole Centrale de Lyon and graduated from SUPCOM. Passionate about research, staying up to date with the latest advancements, and applying cutting-edge AI achievements in practical applications.

Work Experience

AI / ML Engineer   02/2021 – present │ Sfax, Tunisie
Udini - Dental AI
- Developed a high-precision 3D registration algorithm to align structured light intraoral scans with real photos in different poses (frontal, lateral, intraoral), ensuring sub-millimeter accuracy.
- Pioneered self-supervised learning for 3D IOS analysis using models like PointGpt, PointBert, and PointMAE to improve segmentation and labeling accuracy.
- Organizer of the 3DTeethLand 🔗 challenge (MICCAI 2024): Developed evaluation metrics, data governance strategy, and managed end-to-end submission process.
- Conducting a proof-of-concept for a Diffusion Probabilistic Model to generate 3D point cloud crown design.
- Designed, developed, and deployed an innovative approach for 3D teeth intraoral scan segmentation and labeling using GNN. Achieved 94.5% f1 score on the Teeth3DS dataset while significantly reducing memory usage and processing time, making it a production-ready solution.
- Actively contributed as an organizing member for the 3D teeth segmentation and labeling 🔗 challenge (🔗 MICCAI 2022): Created scripts for 3D data preprocessing, data annotation pipeline, and evaluation metrics.
- Utilized machine learning algorithms to predict smile design aesthetics parameters from face landmarks.

+ *External collaboration: Reeplayer (* Soccer AI camera*)*
Cloud-Based Version:
- Developed, fine-tuned and deployed object detection models using Yolov7
- Collaborated on the design and implementation of a VPTZ system for dynamic camera parameter estimation for action tracking.

Edge-Based Version (Jetson Orin):
- Customized gstreamer plugins and deepstream pipeline for optimized soccer video processing and real-time action tracking.

Graduation Internship   04/2020 – 11/2020 │ Lyon, France
LIRIS Laboratory, Ecole Centrale de Lyon 🔗
  3D modeling of deformable objects for the simulation of fruit grasping with a robotic arm in the context of Learn-Real project: simulation of the behavior of deformable body (fruit) with different rigidity based on mass-spring system approach.

Engineer Internship   06/2019 – 07/2019 │ Sfax, Tunisie
Digital Research Center in Sfax 🔗

  Development of LipReading system: speech recognition through mouth landmark points based on deep learning architecture. Improve this model using data augmentation techniques based on GANs.

Human Formation Internship   07/2018 – 08/2018 │ Tunis, Tunisie
Hat Web Security Lab 🔗

- Participation in external security audit processes (vulnerability scan + pentesting + reporting)

- Participation in PCI-DSS certification process

Education

Information and Communication Technology Engineering   2017 – 2020 | Tunis, Tunisie
Higher school of communications of Tunis (SUP'COM)
- **Option**: IA & Cyber security

Pre-engineering Cycle   2015 – 2017 | Sfax, Tunisie
Preparatory Engineering Institute of Sfax (IPEIS)
- Section: Mathematics/Physics (Rank 120/1800)

Skills

✓ **Programming languages:**
Python / c++

✓ **Cloud**
AWS (S3, Sagemaker, sqs)

✓ **Deep learning frameworks:**
Pytorch / Pytorch3D / Tensorflow / ONNX / Tensorrt

✓ **MLops Tools**
Git / DVC / Docker / mlflow / W&B

✓ **Programming libraries**
OpenCV / numpy / pandas / scikit-learn / PyG / matplotlib / open3d ...

✓ **Video Analytics and Streaming:**
Deepstream / gstreamer

Languages

French   **English**

Publications And Preprint

TSegLab: Multi-stage 3D dental scan segmentation and labeling   2025
Ahmed Rekik, Achraf Ben-Hamadou, Oussama Smaoui, Firas Bouzguenda, Sergi Pujades, Edmond Boyer
Revue: Computers in Biology and Medicine

3DTeethSeg'22: 3D Teeth Scan Segmentation and Labeling Challenge 🔗   2023
A Ben-Hamadou, O Smaoui, A Rekik, S Pujades, E Boyer, H Lim, M Kim, M Lee, M Chung…

Teeth3DS: a benchmark for teeth segmentation and labeling from intra-oral 3D scans 🔗   2022
A Ben-Hamadou, O Smaoui, H Chaabouni-Chouayakh, A Rekik, S Pujades, E Boyer…

Certificates

- Nvidia DLI: Building Video AI Applications at the Edge on Jetson Nano
- Coursera: Machine Learning Engineering for Production (MLOps) Specialization
- Coursera: Neural Networks and Deep Learning
- Cisco: CCNA 1,2,3 and 4 & CyberOps