Alex Costanzino
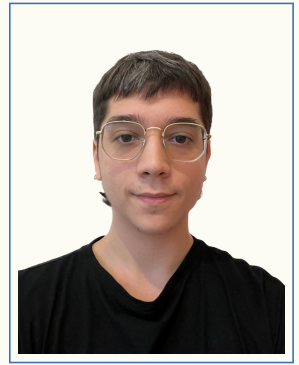## *Curriculum Vitae*

Bologna, Italy
📱 *+39 331 9102558*
✉ *alex.costanzino@unibo.it*
🌐 *github.com/arcanoXIII*

Personal Information

Website   https://www.unibo.it/sitoweb/alex.costanzino
ORCID iD   0000-0001-9859-8482
Google Scholar   J_EBAXEAAAAJ

Short Bio & Research Interests

PhD student in Computer Science and Engineering and Teaching Assistant at University of Bologna. My current research activity focuses on Artificial Intelligence and Deep Learning techniques for Computer Vision, in particular for Depth Estimation, Novel View Synthesis and 3D Anomaly Detection & Segmentation.

Education

2022 - ongoing   **PhD in Computer Science and Engineering**
at University of Bologna.

2020 - 2022   **Master's Degree in Artificial Intelligence**
at University of Bologna,
with a final mark of 110L/110.
Master Thesis *Mitigating non-Lambertian surfaces issues in Stereo Matching with Neural Radiance Fields.* [https://amslaurea.unibo.it/26933/]

2017 - 2020   **Bachelor's Degree in Automation Engineering**
at University of Bologna,
with a final mark of 104/110.
Bachelor Thesis *Machine learning. Principi teorici e applicazioni.*

2012 - 2017   **High School Diploma in Automation**
at IIS Alessandro Volta, Sassuolo (MO), Italy,
with a final mark of 100/100.
Winner of XXXI edition of Lucchese Prize.

Background Knowledge & Skills

Languages   Italian (native), English (fluent, B2 Cambridge Assessment).

Programming Languages   Python, C++, Scala.

Frameworks   OpenCV, Open3D, PyTorch, TensorFlow, WandB.

Relevant Work Experience

2022 - 2022   **Research Internship for Master Thesis preparation**
at Computer Vision LAB, University of Bologna.

2021 - 2022   **AI Software Analyst & Developer**
at HPE Coxa srl, Modena (MO), Italy.
- Image-based 2D Anomaly Detection;
- Space Optimization via Constraint Programming;
- Quality Control and 3D reconstruction.

2019 - 2020   **Student Collaboration Activities**
at Laboratorio di Automazione e Robotica, University of Bologna.
- Camera Calibration;
- Pattern Recognition for Robotic Arm Guidance.

Teaching Activities

2022 - ongoing   **Teaching Assistant**
at University of Bologna.
Teaching Assistant of the *Computer Vision and Image Processing* course for the Master's Degrees in Computer Engineering, Automation Engineering and Electronic Engineering.

Co-supervised Students

Del Moro, Mirko   *A Test Time Adaptation Protocol to improve Industrial Anomaly Detection and Segmentation*, University of Bologna, Master's Degree in Artificial Intelligence [LM-DM270]

Caltabiano, Sofia   Creation of a dataset for Instance Segmentation of Transparent and Mirror surfaces, University of Bologna, Internship in Automation Engineering [LM-DM270]

Lo Russo, Andrea   *Reti neurali monoculari per la stima della profondità di superfici non-Lambertiane*, University of Bologna, Master's Degree in Computer Engineering [LM-DM270]

List of Publications

2023   **Alex Costanzino**, Pierluigi Zama Ramirez, Giuseppe Lisanti, Luigi Di Stefano *Multimodal Industrial Anomaly Detection by Crossmodal Feature Mapping.* [Submitted to CVPR 2024]

2023   **Alex Costanzino**, Pierluigi Zama Ramirez, Matteo Poggi, Fabio Tosi, Stefano Mattoccia, Luigi Di Stefano *Learning Depth Estimation for Transparent and Mirror Surfaces.* [Accepted at ICCV 2023]

2023   Pierluigi Zama Ramirez, Fabio Tosi, Luigi Di Stefano, Radu Timofte, **Alex Costanzino**, Matteo Poggi, Samuele Salti, Stefano Mattoccia, Jun Shi, Dafeng Zhang, Yong A, Yixiang Jin, Dingzhe Li, Chao Li, Zhiwen Liu, Qi Zhang, Yixing Wang, Shi Yin. *NTIRE 2023 Challenge on HR Depth from Images of Specular and Transparent Surfaces.* [Accepted at CVPR 2023 Workshops]

2023   Pierluigi Zama Ramirez, **Alex Costanzino**, Fabio Tosi, Matteo Poggi, Samuele Salti, Stefano Mattoccia, Luigi Di Stefano. *Booster: a Benchmark for Depth from Images of Specular and Transparent Surfaces.* [Accepted at IEEE Transactions on Pattern Analysis and Machine Intelligence]

Organization of Workshops & Tutorials

Workshops

[W1] *NTIRE 2023: 8th New Trends in Image Restoration and Enhancement Workshop and Challenges*, **CVPR 2023** (Vancouver, Washington) [https://cvlab-unibo.github.io/booster-web/ntire] [https://cvlai.net/ntire/2023/]

(W1.1) *Track 1* - HR Depth from Images of Specular and Transparent Surfaces - Stereo [https://codalab.lisn.upsaclay.fr/competitions/10494]

(W1.2) *Track 2* - HR Depth from Images of Specular and Transparent Surfaces - Mono [https://codalab.lisn.upsaclay.fr/competitions/10502]

Relevant Projects

2022 **Key-point matching & generation in NLP**
Key-point matching & generation with Bidirectional Encoder Representations from Transformers (BERT) based neural models and recurrent sequence-to-sequence models.

2021 **Visual inspection of motorcycle connecting rods**
Application of classical Computer Vision techniques to calculate position, dimension, orientation and other relevant feautres of connecting rods in a noisy environment.

2021 **Very Large Scale Integration design in CP and SMT**
Design of an optimization tool for the positioning of chips on a silicon wafer by means of CP and SMT techniques.

2020 **Bayesian Networks for the diagnosis of psychiatric diseases**
Development of a Bayesian Network for data-driven diagnosis of psychiatric diseases based on environmental factors and ongoing symptoms.

2020 **Image-based food recognition with U-Nets**
Development of a tool for semantic classification of food based on encoder-decoder architecture endowed with refined optimization techniques.

Bologna, December 22, 2023   In witness whereof: Alex Costanzino