ALEXANDROS BENETATOS

Computer Vision Scientist

abenetatos.com | github.com/alex-bene | alexandrosbene@gmail.com | /in/alexandros-benetatos

SUMMARY

My research aspiration is to create immersive and interactable 3D worlds grounded in multiple modalities, populated with adaptable digital humans, and driven by advanced computational intelligence. The intrigue of science fiction movies, where worlds indistinguishable from reality are simulated from a plethora of modalities and dynamically adapt to language commands, has always captivated me. This fascination has grown into a deep interest in designing convincing 3D environments and exploring the nuanced relationship between human perception and cognitive processes within these simulated settings. My goal is to create systems that deeply engage users through these digital humans, achieving a level of interaction that is both intuitive and meaningful.

Building on this, I am currently a Computer Vision Scientist holding a degree in Electrical & Computer Engineering, majoring in Computer Science, from the National Technical University of Athens. Over the past 10 years, I have been involved with science and robotics, winning numerous awards in competitions and introducing over 60 young students to STEM, using educational robotics as a medium to teach complex engineering concepts.

EDUCATION

09/16 – 07/22 **Electrical and Computer Engineer | Integrated BSc/MSc 5 years** — **NTU Athens**

GPA: 8.83/10 | Major GPA: 9/10 | top 9% of my class | Computer Science Major

Notable projects: ① Face and hand tracking with optical flow estimation ② Video action recognition ③ Song emotion recognition ④ Greek spell-correcting automation ⑤ Two publications (see below).

PUBLICATIONS

2024 **Stellar: Systematic Evaluation of Human-Centric Personalized Text-to-Image Methods**

P. Achlioptas, A. Benetatos, I. Fostiropoulos and D. Skourtis — **ArXiv**

A deep study and evaluation of human-centric personalized text-to-image generation models where an input photo of an individual is used to ground the image generation process along with text describing the desired visual context. We ① curate a high-quality ground-truth dataset for the task with rich semantic annotations ② introduce specialized metrics that disentangle fundamental properties of the systems and correlate much stronger with human judgment and ③ produce an efficient SoTA text2image model, that does not require per-subject finetuning. (**pdf**, **website**)

2023 **Generating Salient Scene Graphs with Weak Language Supervision**

A. Benetatos, M. Diomataris, V. Pitsikalis and P. Maragos — **EUSIPCO**

Sets a new SoTA for language-supervised Scene Graph Generation (SGG), the task of building graphs where nodes represent visual entities and edges represent predicate relations connecting two entities in <subject - predicate - object> triplets. We extract salient relations from image descriptions and weakly train SGG models. We also introduce new metrics to quantify saliency. (**pdf**, **video**)

2021 **Assessing Vision Quality in Retinal Prosthesis Implantees through Deep Learning: Current Progress and Improvements by Optimizing Hardware Design Parameters and Rehabilitation**

A. Benetatos, N. Melanitis and K. S. Nikita — **EMBC**

Developed a framework to simulate the performance of retinal prosthetic devices, exploring how different hardware parameters and rehabilitation periods impact vision restoration. (**pdf**, **video**)

EXPERIENCE

04/23 – 03/24 **Research Scientist | Personalized Image Generative AI** — **Steel Perlot**

supervised by Panos Achlioptas

① Implemented and improved personalized text-to-image methods. ② Developed multi-GPU training codebase. ③ Built a semi-automatic framework to generate diverse, high-quality language prompts. ④ Developed metrics to evaluate human identity, object, and relation accuracy of generations.

04/21 – 07/22 **Diploma Thesis Research Intern | Salient Scene Graph Generation using Weak Supervision on Image Captions** — **NTU Athens & Deeplab**

co-supervised by Prof. Petros Maragos, Vassilis Pitsikalis and Markos Diomataris

Besides my thesis, I also led a workshop on "Statistical Concepts" for the Ministry of Digital Governance.

09/17 – 12/20 **Prometheus Eco Racing | a Research Team Building Efficient Electric Vehicles** — **NTU Athens**

- Driver's vital senses & concentration monitoring and anomaly detection using machine learning. The project won **1st place** in the Safety Award category at the Shell Eco-Marathon - 2018
- Car and race track simulation to determine the most efficient racing strategy on the track
- PR and FR head: new website, new logo (rebranding), COVID campaigns, community events, etc.

10/16 – 07/24 **Coach for FIRST robotics competitions student teams** — **Athens**

Led 15 member teams to win international awards, introducing them to complex engineering concepts.

NOTABLE ACHIEVEMENTS & AWARDS IN SCIENCE | ROBOTICS

10/17 – 07/24 Various of National and International awards as a coach of FIRST robotics competitions student teams. Notable are **1st place** for robot programming (2018), robot performance (2022, 2024) and technical engineering (2022, 2024), **8th worldwide place** for robot performance (2019) the and **first ever award** won by a **Greek** team in an **International FLL** competition (FIRST Championship, 2019)

05/16 **4th** overall place at the last phase of the **National Physics Competition** and **qualification** to the National Physics Team participating in the **47th International Physics Olympiad** in Switzerland.

10/15 **2nd** overall place on the 7th **National Robotics Competition** WRO Hellas and **qualification** to the National Robotics team participating in the **12th World Robot Olympiad** in Qatar.

SKILLS

- **Programming**: Professional experience with Python for Deep Learning (8+ years of experience). Very good knowledge of C, C++, Java, MATLAB, Simulink, HTML, CSS, JS, PHP, SQL
- **Frameworks**: Pytorch, 🤗-related (Diffusers, Transformers, Accelerate), Gradio, Streamlit, Scikit-Learn
- **CAD**: Good knowledge of Onshape and SolidWorks
- **Music**: Piano Diploma (Haydn Concerto, Beethoven Tempest), Guitar Degree, Music Harmony Degree