

# Alberto González Olmos

## NLP, GenAI Data Scientist

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**Profile:** Seeking an AI/ Data Science position to leverage my expertise in machine learning, data analysis, and research. By working on diverse and challenging problems, I have gained experience in understanding complex topics and in applying a wide range of AI and machine learning techniques. I thrive in fast-paced, multidisciplinary projects, working with people of different backgrounds, and am committed to ongoing personal and professional development. I am ready to start working immediately.

## WORK EXPERIENCE

### Machine Learning Engineer

**Jan 2024**

*ExSeed Health, Contract*

*remote*

Field: Machine Learning & Computer Vision

- Developing segmentation and tracking algorithms in Pytorch and YOLOv8.
- Using DevOps, MLOps methodology.
- Deploying the system in AWS (SageMaker, Lambda, DynamoDB and S3).
- Result: Improved tracking of sperm cells, automatic analysis of sperm quality.

### Data Scientist

**Aug 2023 - Dec 2023**

*Meddoc Flow ApS., Contract*

*remote*

Field: Natural Language Processing

- Developed RAG and NLP algorithms to retrieve Medical Device Regulation (MDR) queries in a vector database.
- Using LlamaIndex and Truera to create a RAG pipeline and implement the triad metrics: context relevance, groundedness and answer relevance; and retrieval algorithms: sentence window retrieval, auto-merging retrieval.
- Result: Proof of Concept retrieval system to query the MDR with NLP.

### PhD student

**Sep 2021 - Jan 2024**

*Department of Clinical Medicine, Aarhus University*

*Aarhus, Denmark*

Field: Machine Learning & Hypertension

- New time-series contrast analysis of laser speckle images. Improved optical system.
- Result: 2 publications, patent.

### Machine Learning internship

**Jul 2019 - Sep 2019**

*Telefónica Alpha, Health Moonshot*

*Barcelona, Spain*

Field: Machine Learning & Human Computer Interaction

- EDA and time-series analysis of phone sensors, electrodermal activity from empatica's wristband and self reported questionnaires in a phone app.
- Result: Insights into the relation between sensor data, arousal state and self-reported states of happiness.

**Marie Curie Early Stage Researcher****Mar 2017 - Apr 2020***Department of Computing Science, University of Glasgow**Glasgow, Scotland*

Field: Machine Learning, Human-Computer Interaction &amp; Attachment Theory

- EDA and mapping of electrodermal activity to vibrotactile cues and psychophysics.
- Result: Insight into the use of vibrotactile feedback to represent arousal in emotionally shut down people.

**Biomedical Engineer****Mar 2015 - Apr 2017***Max-Planck Institute for Metabolism Research**Cologne, Germany*

Field: MRI &amp; fMRI analysis

- Designed Experiment. Segmented brainstem in MRI images, analyzed fMRI data. Used time-series analysis to debug the processing pipeline.
- Result: Successful completion of an ambitious project.

**Machine Learning Research Fellowship****Mar 2013 - Apr 2014***Department of Mathematics, University of Barcelona**Barcelona, Spain*

Field: Machine Learning &amp; Atherosclerosis

- Implemented new metrics and alignment algorithms on Intravascular Ultrasound images.
- Result: Faster and more reliable alignment of IVUS sequences from coronary arteries.

**SKILLS****Programming** Python, SQL, JavaScript, Docker, C++, Matlab, Git, L<sup>A</sup>T<sub>E</sub>X, R, Bash**Data Science** *ML:* PyTorch, Tensorflow, scikit-learn, scipy, OpenCV.*NLP:* sentence-transformers, LangChain(python and JS), LlamaIndex, NLTK, Truera, openAI.*Data Visualization:* matplotlib, plotly-dash, folium.*Front-end:* React.*Deployment:* AWS, Azure**Languages** Spanish (native), English (TOEFL:108/120),

Danish (module 3, learning), German(A2)

**Soft skills** I am good at working in teams and communicating across stakeholders with diverse backgrounds and educational levels.**EDUCATION****PhD. Clinical Medicine**, *Aarhus University*

pending defense

Thesis: Characterizing hypertension in the microcirculation using laser speckle contrast imaging

Awards:

- Patent co-author: González Olmos A, Postnov DD. High-speed laser speckle contrast imaging. Patent pending, application number EP 22173808.

2022

**MSc. Biomedical Engineering**, *University of Barcelona*

Sep 2014

Thesis: Bias-Variance analysis in the detection of emotions using electroencephalogram

**BE. Electronics Engineering**, *Politecnia University of Cartagena*

Oct 2010

Thesis: Artificial muscle control system

Awards:

- Winner of national thesis award in Electronics Engineering. Top 1% in Spain. *Spanish School of Engineering*

- Finalist of national bachelor thesis award. *Universia-Vodafone Foundation*

- Outstanding bachelor thesis. Top 1% in the university. *Politecnia University of Cartagena*

## COURSES

<b>Applied DevOps Engineering</b>	in progress
<i>IBM - Coursera, professional certificate</i>	
<b>Azure Developer Associate (AZ-204)</b>	in progress
<i>Microsoft - Coursera, professional certificate</i>	
<b>Build LLM Apps with LangChain.js</b>	2024
<i>LangChain - deeplearning, short course</i>	
<b>Build and Evaluate advanced RAG applications</b>	2023
<i>LlamaIndex &amp; truera - deeplearning, short course</i>	
<b>Vector Databases: from Embeddings to Applications</b>	2023
<i>Weaviate - deeplearning, short course</i>	
<b>Advanced React</b>	2023
<i>Meta - Coursera, course</i>	
<b>AI Engineering</b>	2023
<i>IBM - Coursera, professional certificate</i>	
<b>Data Science</b>	2023
<i>IBM - Coursera, professional certificate</i>	
<b>Machine Learning and Computer Vision, grade: 12</b>	2020
<i>Aarhus University, master course</i>	
<b>Innovation in Engineering, grade: 10</b>	2020
<i>Aarhus University, master course</i>	
<b>Computational Interaction</b>	2018
<i>University of Cambridge, summer school</i>	
<b>fMRI analysis</b>	2016
<i>Max Plank Institute for Human Cognitive and Brain Science, course</i>	
<b>Machine Learning</b>	2014
<i>Stanford - Coursera, specialization</i>	

## PUBLICATIONS

### **Lossless temporal contrast analysis of laser speckle images from periodic signals**

*Alberto González Olmos, Zaka Humlesen, Vladimir Matchkov, and Dmitry D. Postnov*

Biomedical Optics Express. 2023

Topic: Improved time-series analysis of LSCI.

### **Optimizing precision of laser speckle contrast imaging** *Alberto González Olmos,*

*Sharvari Zipelwar, Smrithi Sunil, David A. Boas, Dmitry D. Postnov* Scientific Reports. 2023

Topic: Analysis of the optical system's parameters by analyzing contrast statistics.

### **Augmenting the perception of other's anxiety with subliminal interfaces** *Alberto*

*González Olmos, Stephen Brewster* 3rd Symposium on Computing and Mental Health. CHI conference, Montreal. 2018

Topic: Exploration of mapping electrodermal activity to vibrotactile cues to represent states of arousal.

## HOBBIES

I love creating with my two children and my wife and socializing with co-workers. We recently bought a house in Lystrup and we are settling in Denmark. I also enjoy running and team sports, especially badminton, football and board games with my friends and family.