



# Liviu-Andrei Troaca-Luchici

**Date of birth:** 10/06/1989 | **Nationality:** Romanian | **Gender:** Male |

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## ● ABOUT ME

I am an Associate Professor at RAU specialised in computer science and mathematics. My focus lies at the intersection between mathematics, computer science, game theory, decision making, and neuroscience, with applications to artificial intelligence, machine learning, financial markets, information warfare, and other socio-economic systems.

## ● WORK EXPERIENCE

10/2021 – CURRENT Bucharest, Romania

### ASSOCIATE PROFESSOR (LECTURER) ROMANIAN-AMERICAN UNIVERSITY

- I develop and deliver comprehensive undergraduate courses in Web Applications Programming, Numerical Methods, and Software Packages for Data Analysis. Additionally, I instruct a master's course in Artificial Intelligence to advance AI education.
- I conduct theoretical and applied research at the intersection between mathematics, computer science, game theory, decision making, and neuroscience with applications to artificial intelligence, machine learning, financial markets, information warfare, and other socio-economic systems.

#### Leadership in AI Research Initiatives:

- **Executive Director, Center of Research in AI (CRAI):** I founded and I am currently leading the CRAI at RAU since 2022, driving innovative AI research projects and collaborations.
- **Scientific Director, Computational Science and Machine Intelligence Center:** Since 2022, I oversee and direct the center's research activities, blending computational science with machine intelligence to foster cutting-edge research.

2022 – CURRENT Bucharest, Romania

### AI AND MACHINE LEARNING INSTRUCTOR ILBAH STUDIOS

- Crafted an in-depth course curriculum focused on machine learning using Python, tailored to effectively communicate complex concepts to a diverse audience.
- Played a crucial role in educating and inspiring the next generation of AI experts, equipping them with the necessary skills and knowledge in one of the most sought-after domains in technology.
- Employed a practical, hands-on teaching methodology, ensuring that students gain not only theoretical understanding but also practical proficiency in applying machine learning techniques in Python.
- Meticulously developed comprehensive course materials, including lectures, practical exercises, and real-world case studies, to provide a holistic learning experience.
- Worked closely with a team of educational professionals and industry experts to continuously update and refine the course content, staying abreast of the latest advancements in the field of machine learning.

2021 – CURRENT Israel

### AI RESEARCH SCIENTIST COREAI

- Led the design and development of innovative AI solutions across diverse industries, including finance, waste management, manufacturing, consumer behaviour, and social media.
- Adapted AI technologies and developing new algorithms to meet specific industry challenges for enhanced decision-making and operational efficiency

- Focused on providing actionable insights for stakeholders and ensured the seamless integration and scalability of AI technologies in various business environments.
- Pioneered the implementation of Machine Learning Operations (MLOps) for efficient lifecycle management of AI and ML models

31/08/2020 – CURRENT Bucharest, Romania

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### **CTO & CO-FOUNDER SILOAPP**

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- I oversee the development team, guiding them through complex project stages and ensuring the delivery of high-quality, efficient solutions.
- Directly involved in developing and supervising the system architecture, integrating cutting-edge web and 3D graphics technologies. This ensures a robust, scalable, and versatile platform.
- Leveraged expertise in computational geometry and 3D modeling to create advanced prototyping tools. This includes integrating CAD (Computer-Aided Design) capabilities into the platform, significantly enhancing the design and prototyping process for silo storage producers.
- Combining strategic vision with hands-on technical expertise, I have been instrumental in driving the startup from concept to a viable product, significantly impacting the Agritech sector.

10/12/2015 – 30/09/2021 London, United Kingdom

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### **CO-FOUNDER & LEAD CONSULTANT DACIAN CONSULTING LIMITED**

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- As a co-founder and principal consultant, I played a pivotal role in establishing and growing Dacian Consulting, a firm specialising in cutting-edge technology solutions.
- I leveraged a diverse technology stack including Python, JavaScript frameworks, cloud computing solutions, and varied storage and messaging solutions to deliver tailored products to clients.
- I utilised my skills in Computer Vision, Natural Language Processing (NLP), Predictive Analytics, and Deep Learning to address complex business challenges, providing clients with a competitive edge in their respective industries.
- I was involved in all aspects of the business, from technical leadership and project management to client relations and strategic planning, ensuring the delivery of high-quality, impactful solutions.
- I assisted a variety of businesses in embracing digital transformation through innovative technology solutions, significantly enhancing their operational efficiency and market presence.

31/08/2018 – CURRENT London, United Kingdom

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### **ADVISOR ENTERPRISE MANAGEMENT 360**

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- As an advisor, I contribute to Enterprise Management 360 by creating insightful content on the latest technologies in the fields of Artificial Intelligence (AI), Machine Learning (ML), and data science.
- Regularly develop articles, reports, and other forms of content that analyse current trends, emerging technologies, and future predictions in AI and ML. This involves synthesizing complex technical information into accessible and engaging content for a wide range of audiences.
- My contributions help shape understanding and awareness of AI and ML technologies among professionals and enthusiasts in the field, influencing how these technologies are perceived and adopted in various industries.

31/08/2018 – 31/08/2020 United Kingdom

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### **CTO FILED**

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- As the CTO of Filed, a dynamic startup in the marketing sector, I played a pivotal role in developing a web-based solution aimed at optimising paid advertising campaigns on platforms like Facebook and Google.
- Established and managed the development office in Romania, effectively leading a team of over 25 professionals. This involved not only overseeing the team's growth but also ensuring their continuous development and productivity.
- Spearheaded the development and supervision of the system architecture, incorporating a diverse range of technologies. This created a powerful, scalable, and efficient platform.
- Innovatively designed and implemented an AI system that powers the platform, employing techniques in time series analysis, optimisation, and machine learning. This significantly enhanced the platform's capability to optimize paid advertising strategies.
- Utilised my in-depth knowledge in microservices architecture to ensure the platform's scalability and robustness, enabling it to handle complex, large-scale advertising campaigns with ease.
- My technical leadership and strategic vision were instrumental in transforming Filed into a key player in the digital marketing space, delivering tangible results to advertisers worldwide.

30/09/2015 – 29/02/2016 London, United Kingdom  
**DATA SCIENTIST KING'S COLLEGE LONDON**

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- Applied cutting-edge computer vision algorithms and statistical modeling to study the mechanics of cell motility in vivo.
- Led a project aimed at creating a computational tool to assist cell biologists in probing different aspects of cellular motility. This tool represents a significant advancement in the field, enabling more in-depth and efficient analysis of cell movement.
- Utilised Python and Matlab extensively, leveraging these programming languages to analyse complex biological data and develop robust, user-friendly tools for research purposes.
- Bridged the gap between data science and biology, demonstrating the potential of data-driven approaches in enhancing our understanding of biological processes.
- My work at the Stramer Lab not only contributed to the field of cell biology but also demonstrated the broader applications of data science in scientific research, setting a precedent for future interdisciplinary collaborations.

30/09/2014 – 31/03/2015 London, United Kingdom  
**GRADUATE TEACHING ASSISTANT UNIVERSITY COLLEGE LONDON**

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I was responsible for supporting the laboratories, assisting and teaching lectures and tutorials, grading assignments and preparing additional course materials for mechanical engineering laboratories, fluid mechanics and applied mechanics courses.

09/2010 – 02/2016 London, United Kingdom  
**PERSONAL TUTOR FREELANCER**

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- Provided tutoring services in an array of subjects, including Maths, Physics, Chemistry, Statistics, Biology, and Computer Programming, showcasing a broad and deep understanding of these disciplines.
- Catered to a diverse student base, ranging from GCSE students to undergraduates and master's students, demonstrating flexibility and the ability to adapt teaching methods to suit various learning needs and levels.
- Offered specialised tutoring in advanced subjects such as Applied Mechanics, Dynamics, Fluid Mechanics, Mechanics of Materials, Calculus, and Engineering Mathematics. Additionally, provided expert guidance in using Matlab for engineers and scientists.
- Developed personalised teaching plans to address individual student needs, ensuring a thorough understanding of complex concepts and helping students achieve academic success.
- Acted as a mentor to students, offering guidance and support beyond traditional tutoring, aiding in their overall academic and personal development.

## ● **EDUCATION AND TRAINING**

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30/09/2011 – 31/08/2017 United Kingdom  
**PHD IN COMPUTATIONAL BIOMECHANICS** University College London

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2013 – 2014 United Kingdom  
**SHORT COURSE - ADAPTIVE MODELLING OF COMPLEX DATA** University College London

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Topics covered:

- 1) Supervised learning, including linear regression, kernels, SVMs
  - 2) Unsupervised learning, including PCA, clustering
  - 3) Time series analysis, including belief networks, Hidden Markov chains, Kalman filters
- All programming was done in Matlab.

**Field of study** Natural sciences, mathematics and statistics, Information and Communication Technologies

2012 – 2013 Woods Hole, United States  
**SHORT COURSE - COMPUTATIONAL IMAGE ANALYSIS FOR CELL AND DEVELOPMENTAL BIOLOGY** Marine Biological Laboratory

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Topics covered: image segmentation, wavelets, filters, particle tracking, pattern recognition and machine learning, fundamentals of graph theory, statistical modelling, data structures, software development

All programming was done in Matlab.

**Field of study** Natural sciences, mathematics and statistics, Information and Communication Technologies

2010 – 2011 Huntington, New York, United States

**COMPUTATIONAL CELL BIOLOGY SUMMER SCHOOL** Cold Spring Harbor Laboratory

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The course focused on applying the mathematics of dynamical systems together with computer simulation techniques to the study of cellular processes.

**Field of study** Natural sciences, mathematics and statistics, Information and Communication Technologies

2009 – 2010 London, United Kingdom

**THEORETICAL MATERIAL SCIENCE SUMMER SCHOOL** Thomas Young Centre

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The school focused on classical and quantum transport of matter across time and length scales, with courses by the lecturing team from the Doctoral Training Centre on Theory and Simulation of Materials at Imperial College London.

**Field of study** Natural sciences, mathematics and statistics

31/08/2008 – 31/05/2011 London, United Kingdom

**BENG MECHANICAL ENGINEERING** King's College London

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London, United Kingdom

**UCL ADVANCES ENTERPRISE BOOTCAMP** University College London

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**Field of study** Business, administration and law

London, United Kingdom

**ADVENTURES IN SPACE AND STORYTELLING** University College London

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**Field of study** Generic programmes and qualifications

London, United Kingdom

**PARALLEL PROGRAMMING WITH OPENMP AND MPI** NAG & King's College London

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**Field of study** Information and Communication Technologies

## ● LANGUAGE SKILLS

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Mother tongue(s): **ROMANA**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
<b>ENGLISH</b>	C2	C2	C2	C2	C2

*Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user*

## ● ADDITIONAL INFORMATION

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### PUBLICATIONS

[Introducere în învățarea automată: Învățarea supravegheată și nesupravegheată în Python](#) – 2023

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Luchici Andrei, 2023, ISBN 978-973-0-37778-1

[DEALING WITH VAGUENESS IN AGENT-BASED MODELS: A PYTHON FUZZY LOGIC ABM FRAMEWORK](#) – 2022

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[Persistent and polarized global actin flow is essential for directionality during cell migration](#) – 2019

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## [Heterotypic contact inhibition of locomotion can drive cell sorting between epithelial and mesenchymal cell populations](#)

– 2019

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## [EphB2 and ERK signaling are required for heterotypic contact inhibition of locomotion to drive cell sorting](#)

– 2018

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## [Predictive Maintenance – an Archetype for Operational Efficiency](#) – 2018

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## [Inter-cellular Forces Orchestrate Contact Inhibition of Locomotion](#) – 2015

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### **CONFERENCES AND SEMINARS**

24/11/2023 – 24/11/2023 – Bucharest, Romania

#### **10th EDITION OF THE INTERNATIONAL CONFERENCE APPLIED INFORMATICS IN ECONOMY AND INFORMATION TECHNOLOGY: E-Society 2023 – Knowledge and Innovation. RevolutionAI**

I delivered a talk, "Decoding the language of misinformation: A comparative analysis of fake and real news" showcasing my results in leveraging the power of machine learning, our study systematically deconstructs the textual content of news articles, to unearth the subtle and overt differences between real and fake news narratives.

09/11/2023 – Online

**Guest Lecture - Babeş-Bolyai University** I gave a guest lecture on AI and Fake News in Public Health to master students in the School of Public Health. The lecture touched on the foundations of deep neural networks and Large Language Models connecting the latest AI developments to potential dangers and opportunities in the Public Health communication space.

24/10/2023 – 24/10/2023 – Bucharest, Romania

#### **Round table - Solutions for Addressing Disinformation and Anti-Scientific Narratives on Health**

**Topics** I delivered a talk, "Decoding the Language of Disinformation: A Comparative Analysis of Fake and Real COVID-19 News", showcasing a statistical analysis comparing the language in fake and real news during the COVID-19 pandemic.

11/09/2023 – 15/09/2023 – Lublin, Poland

**EFFECTIVE LEARNING, TEACHING AND COMMUNICATION WITH STUDENTS (BIP)** I delivered a series of three lectures about Generative AI focused on the challenges and opportunities brought by this technology to a non-technical audience (students and academics).

06/09/2023 – 09/09/2023 – Sozopol, Bulgaria

#### **XXVII EFSS 2023 "CONCEPTUALIZING DIGITAL REALITY THROUGH METAPHORS: SEMIOTIC AND INTERDISCIPLINARY PERSPECTIVES"**

I delivered a talk, "Metaphoric Creativity in Large Language Models: Exploring and Classifying GPT-Generated Metaphors", summarising preliminary research results about Large Language Models' ability to generate metaphors.

01/07/2023 – 09/07/2023 – Bucharest

#### **Applied Science and Technology for Real-world Apps (ASTRA) - Erasmus Summer School (BIP)**

- I delivered a lecture on agent-based models and their application in understanding misinformation.
- I encouraged and moderated discussions among participants on the subject matter, fostering an environment of collaborative learning and critical thinking.
- I organised workshops or seminars as part of the school program, including inviting guest speakers, preparing schedules, and ensuring the smooth running of these events.
- I provided support to participants, such as one-on-one mentoring, addressing questions related to the course material, and offering guidance on how to apply the learned concepts in practical scenarios.
- I developed evaluation methods to assess participant understanding and gathering feedback to continuously improve the curriculum and teaching methods.
- Engaging with a network of professionals and academics in related fields to enrich the school's program and create opportunities for collaboration.

22/06/2023 – 24/06/2023

#### **4th Edition of the International Conference "SEMIOSIS IN COMMUNICATION" - New Challenges of Multimodality in the Digital Age**

I delivered a talk, "Exploring communication strategies in multi-agent systems: Unveiling Unexpected Behaviors and Implications for Human Understanding", reviewing results in communication between autonomous agents.

## PROJECTS

01/2023 – CURRENT

**Empowering Schools in Self-Regulation of Media and Information Literacy processes (EMILE)** The Empowering schools in self-regulation of Media and Information Literacy processes (EMILE) project aims to expand the reach of media literacy by providing a cross-disciplinary professional development to support teachers' competence in media literacy. It also aims to support adolescents' media literacy skills by empowering their cognitive skills through gamified solutions.

Funded by the European Media and Information Fund (Gulbenkian Foundation)

More information here: <https://www.emile.unifi.it>

09/2021 – CURRENT

**Artificial Intelligence and Misinformation** Utilising a combination of AI, agent-based modeling, and mathematical modeling techniques to study the spread and impact of misinformation and disinformation online. The primary aim is to uncover and understand the patterns of misinformation dissemination, including the specific language and techniques used in the spread of false information.

Dedicated to creating innovative tools that can effectively combat the spread of misinformation. These tools are designed to identify, analyse, and counteract misinformation narratives in real-time.

This project holds significant importance in today's digital information landscape, offering valuable insights into the mechanisms of misinformation and providing practical solutions to a global challenge.

Partially funded by the Livescu Foundation.

01/2022 – CURRENT

**Deep Neural Networks and Language Understanding** Engaged in a cutting-edge project utilising Large Language Models (LLMs) and deep neural networks to delve into the complexities of natural language understanding. The primary objective is to develop advanced neural networks capable of comprehending and interpreting human language with a high degree of accuracy and contextual awareness.

Focusing on creating models that go beyond basic language processing, aiming to achieve a more nuanced and sophisticated understanding of language semantics, syntax, and pragmatics.

This project has significant implications for enhancing AI communication capabilities, leading to more intuitive and effective human-AI interactions in various applications.

## HONOURS AND AWARDS

2013

**Young Cell Biology of the Year – British Society for Cell Biology** Awarded for best doctoral research during the joint BSCB / BSDB spring meeting

2014

**Best Talk Prize – King's College London** Award for Best Oral Presentation at the Doctoral Symposium at King's College London.

2013

**Best Talk Prize – University College London** Award for the best oral presentation at the Doctoral Symposium in Mechanical Engineering.

2012

**Best use of Microscopy in a Talk – Royal Microscopy Society London** Awarded with Dr. J. R. Davis for the best use of microscopy in a discussion during the Actin 2012 meeting.

## NETWORKS AND MEMBERSHIPS

06/2022 – CURRENT UK

**Member of the British Neuroscience Association**

07/2023 – CURRENT UK

**Fellow Royal Statistical Society**

2024 – CURRENT

**Member of the IEEE Computational Intelligence Society**

2024 – CURRENT

**Member of the IEEE Computer Society**

2024 – CURRENT

**Member of the IEEE Signal Processing Society**

2024 – CURRENT

**IEEE Member**

## **VOLUNTEERING**

03/2021 Bucharest, Romania

**Mentor - Teens in AI** I was an AI mentor for the AI Romania Hack event organised by Teens in AI, Romania. During the hackathon, I was primarily involved with mentoring the teams on how to apply artificial intelligence, machine learning, or other data related solutions to solve our societies biggest challenges, like mental health, education, or climate change.

04/2013 – 05/2015 London, UK

**Events Volunteer - Institute of Making - University College London** I helped with public management and the smooth running of the events. This involved welcoming guests, explaining or assisting with making activities and demos, and talking to people about materials.