Maria-Victoria Vladucu
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ABOUT

Professor in Computer Science: I teach advanced university-level courses and conduct high-impact research on how blockchain can drive sustainability and transparency across supply chains and digital governance systems.
My areas of expertise include teaching a diverse range of courses, such as Programming Languages (CSCI 125), Probability and Statistics (CSCI 270), Software Engineering (CSCI 380), Theory of Computation (CSCI 312), Theoretical Concepts in Computers and Computation (CSCI-610), and Programming for Data Science (DTSC 610).

Research Experience: primarily focusing on the intersection of blockchain, sustainability, e-voting, data science, and machine learning. I'm working on how blockchain can drive sustainability initiatives and enhance transparency in various applications. My research focuses on blockchain technology and sustainability, particularly in addressing the critical issue of food waste. E-voting on blockchain aims to bolster electoral processes with security and accessibility. Additionally, my work in data science and blockchain technologies centers on safeguarding transparency and privacy.

SKILLS & QUALIFICATIONS

- Programming Skills: Data Visualization, Data Processing, Hadoop, Jupiter Notebook, Python, Java, R, Oracle, SQL, MongoDB, JavaScript, HTML, CSS, PHP
- Other Certifications: UN Diplomatic Cyber, UC Berkley (Blockchain Fundamentals, Bitcoin and Cryptocurrencies, Blockchain Technology), AWS (Introduction to Blockchain, Designing Blockchain Solutions using Amazon Managed Blockchain) **ADD OTHER CERTIFS**
- **LANGUAGES**: Romanian (native), English (fluent), Spanish(advanced), German (beginner), French (beginner)

EDUCATION

New York Institute of Technology, New York, NY
PhD in Computer Science **September 2023 - May 2027**
Master of Science in Data Science (4.0/4.0) **September 2021 - May 2022**
Thesis: A Blockchain Framework to Improve the Sustainability of Food Supply Chain in New York City
Bachelor of Science in Computer Science – Presidential Honor List (3.8/4.0) **September 2018 - May 2021**

PUBLICATIONS

- MV Vladucu et al. Blockchain in Environmental Sustainability Measures: a Survey - arXiv preprint arXiv:2412.15261, 2024
- Vladucu, M.-V.; Wu, H.; Medina, J.; Salehin, K.M.; Dong, Z.; Rojas-Cessa, R. Blockchain on Sustainable Environmental Measures: A Review. *Blockchains* **2024**, *2*, 334-365. https://doi.org/10.3390/blockchains2030016
- Vladucu, Maria-Victoria, et al. **"E-voting meets blockchain: A survey."** IEEE Access 11 (2023): 23293-23308.
- Vladucu, Maria-Victoria, et al. "A Blockchain Framework to Improve the Sustainability of Food Supply Chain in New York City," 2022

RESEARCH GRANTS

• **NSF Grant 2402240 — RAPID**: Acquisition and curation of time-sensitive field data from severely flooded neighborhoods in NYC from tropical storm Ophelia for environmental sustainability study, PI: Ziqian Dong, 2023–2025, $199,667.

Prepared documents and data analyses for flooding areas in the NY boroughs
Visit flooding sites and collect data from NASA satellites for flooding in NYC
researched information and helped prepare the draft report

• **NSF Grant 1856032** — INFEWS/T3 RCN: City-as-Lab: A Research Coordination Network for the Study of the Food, Energy, and Water Nexus for Sustainable and Resilient Urban Development, PI: Ziqian Dong, 2019–2025, $896,486.

- **2019**: Attended the inaugural workshop at **New York Institute of Technology (NYIT)**, contributing to the early stages of the project focused on sustainable urban development.
  2020: Participated in an **online workshop** on the **food nexus**, exploring the interconnections between food systems and urban sustainability.
- **2021**: Joined an **online workshop** addressing **climate change** and the **water nexus**, discussing the impacts of climate change on water resources and urban resilience.
- **2022**: Contributed to a workshop at **New York University (NYU)**, advancing discussions on urban sustainability and integrating food, energy, and water systems.
- **2023**: Participated in a workshop at **Arizona State University (ASU)**, focusing on the development of **Smart Urban Gardens** and their role in sustainable urban agriculture.
- **2024**: Organized and led a workshop at **New Jersey Institute of Technology (NJIT)**, titled **"Revisiting the Gardens"**, which revisited and expanded on strategies for sustainable urban agriculture.
- **2025**: Organized a concluding workshop at **NYIT**, titled **"A Path Forward"**, to synthesize key findings and chart the next steps for urban resilience and sustainability initiatives.

TEACHING EXPERIENCE

Adjunct Professor, Department of Computer Science, NYIT **2023–Present**

- Instructed undergraduate and graduate-level courses, including **Java Programming**, **Probability and Statistics**, **Software Engineering**, and **Theory of Computation**.
- Developed and implemented student-centered curricula, incorporating practical projects, case studies, and interactive learning strategies to enhance student engagement and understanding.
- Assessed student performance through comprehensive exams, assignments, and applied projects, resulting in a student satisfaction rate of **95%**.
- Provided mentorship and academic guidance to students, fostering a strong understanding of theoretical and practical concepts.

Instructor & Tutor, NYIT **2019–2021**

- Delivered over **200 individual tutoring sessions** to **Computer Science** and **Mathematics** undergraduate students, focusing on core topics such as **Data Structures**, **Discrete Mathematics**, and **Linear Algebra**.
- Taught supplementary lessons in both subjects, helping students improve understanding and academic performance.

- Designed tailored learning materials and resources, resulting in a **20% increase in student grades** for those who participated in the tutoring program.
- Fostered an inclusive and supportive learning environment, adapting teaching methods to accommodate diverse learning styles and needs.

ACADEMIC APPOINTMENTS

Grant Proposal Writing **2023–Present**

- Actively contributed to preparing and writing **grant proposals** that applied **blockchain technology** in **sustainability**, **food supply chain optimization**, **electronic voting**, and **environmental monitoring**.
- Collaborated with interdisciplinary teams to present technical frameworks and innovative solutions, successfully securing **research funding** to advance blockchain-based applications across multiple sectors.

Graduate Assistant, Office of Admissions, NYIT **2021–2022**

- Managed reviewing and evaluating over **500 international student applications**, ensuring adherence to university standards and timely processing.
- Enhanced applicant engagement by responding to queries, facilitating communications, and providing relevant information to prospective students.
- Assisted in developing and maintaining the **CRM system**, streamlining data management and improving reporting accuracy, leading to a **30% improvement in processing time** for application reviews.
- Collaborated with the admissions team to develop outreach strategies, increasing international applications by **15%** during the recruitment cycle.

Service to the College of Engineering and Computing Sciences **2019–Present**

- NYIT Open House **2019 – 2024**
- Undergraduate Research & Entrepreneurship Info Session **2024**
- Admitted Student Day **2019 – 2025**

Journal and Conference Appointments

- **Sustech 2025 Conference, Los Angeles, CA, USA – Chaired five sessions** **April 2025**
- **IEEE ICC 2024, Denver, CO, USA** **June 2024**
- **ICTAI 2023 Georgia, Atlanta, USA** **November 2023**

Reviewer for:

IEEE Access Journal **2023**, **2024**, **2025**

International Conference on Ubiquitous and Future Networks, ICUFN **2025**

IEEE Wireless Communications and Networking Conference, WCNC **2025**

IEEE International Conference on E-health Networking, Application & Services, IEEE Healthcom **2024**

IEEE Global Communications Conference, Globecom **2023** (CSM), **2024** (CSM)

IEEE International Conference on High Performance Switching and Routing, IEEE HPSR **2024**

International Conference on Communications IEEE ICC **2023** (IoTSN Symposium), **2024** (NGNI Symposium)

IEEE Conference on Standards for Communications and Networking, IEEE CSCN **2023**

RESEARCH EXPERIENCE

Research Assistant, Networking Innovation Laboratory, New York, NY **May 2020 – Present**

- Conducted research initiatives focused on integrating **blockchain technology** in **food supply chains**, **electronic voting systems**, and **environmental monitoring**, emphasizing the development of decentralized, scalable solutions.
- Designed and implemented **simulations** and **smart contracts** utilizing **DPoS** and **RAFT consensus** algorithms to ensure **Sybil resistance**, **transparency**, and **fault tolerance** in distributed systems.
- Lead investigator on a project dedicated to modeling **food waste** in **New York City's dairy sector**, leveraging **blockchain-enabled traceability systems** to enhance data integrity and optimize waste reduction strategies.
- Contributed to **multidisciplinary NSF-funded research** on **sustainability** and **climate resilience** in urban infrastructures, emphasizing blockchain's potential for real-time monitoring and data verification.
- Led the **technical design** of algorithms for **e-voting systems**, integrating **blockchain-based consensus mechanisms** such as **Ethereum** and **Goeth** to enhance **security**, **voter authentication**, and **auditability**.
- Analyzed and synthesized technical literature on blockchain implementations in **e-voting**, comparing approaches and examining the impact of blockchain on **voter trust** and **election integrity**.
- Investigated the role of **cryptocurrencies** in **terrorist financing**, employing **blockchain** for **transaction traceability** and **security verification** using **DPoS** and **RAFT** protocols.

Lead Team on Sustainability and E-Voting Surveys **2023–2024**

- Led a team in the design and execution of **technical surveys** to assess **public perception** and **adoption** of **blockchain-based e-voting systems** and **sustainable urban infrastructure solutions**.
- Provided **data-driven recommendations** for improving **blockchain implementation** in both fields, supporting the development of **scalable solutions** for **sustainable cities** and **secure e-voting systems**.

Thesis Research: Blockchain in Food Supply Chain & Dairy Industry **2021-2023**

- Conducted **data science-driven research** to optimize the **food supply chain** in the USA, utilizing **blockchain technologies** to enhance transparency and streamline data flows from **farm to consumer**.
- Focused on addressing **food waste issues** in the **dairy industry**, proposing and developing a blockchain-based solution for improving **supply chain traceability**, **real-time inventory management**, and **waste reduction** strategies.
- Analyzed real-time operational data using **blockchain** and **IoT** to develop a predictive model for optimizing food supply chain logistics.

WORK EXPERIENCE

Intern, Permanent Mission of Romania to the United Nations, New York, NY **July 2020 – March 2021**

- Represented the Mission's diplomatic staff at biweekly UN meetings, briefings, and events held at the United Nations Headquarters, including critical sessions of the UN Security Council, UNOCT, UNCTED, UNICEF, and regional discussions on the Middle East and Latin America.
- Played a key role in drafting and formulating strategic reports, policy briefings, and executive summaries based on UN publications to support Romanian foreign policy and facilitate the decision-making process for the Romanian Ministry of Foreign Affairs.

- Conducted in-depth research on UN resolutions and policy developments, distilling complex information into actionable insights for high-level diplomatic use.
- Provided linguistic and technical support by translating diplomatic and technical documents related to UN events and bilateral meetings, ensuring accuracy and clarity in both written and spoken communication.
- Assisted in the preparation and logistical coordination of preparatory meetings, contributing to the effective representation of Romania's interests in multilateral discussions and international negotiations.

VP and Co-Founder, Developer, Student Google Club NYIT, New York, NY **June 2020 – October 2021**

- Co-founded the Google Developer Student Club at NYIT to create a vibrant community of students passionate about technology and innovation.
- Promoted the club's mission by attending Student Government Association meetings, advocating for student empowerment through technical education and community-driven projects.
- Focused on empowering students to grow as developers and make a tangible impact on their communities by leveraging Google technologies.
- Organized and conducted technical workshops, including hands-on sessions on platforms like Google Cloud Platform, Flutter, Firebase, Android, and TensorFlow, fostering skill development in emerging technologies.
- Led the creation of software projects that addressed local community needs, using cutting-edge Google technologies to solve real-world problems and encourage student participation in development.

OTHER EDUCATIONAL SERVICE ACTIVITIES

Volunteer, American Red Cross Disaster Department **May 2020 - 2023**
Peer Health Educator, New York Institute of Technology, New York, NY **May 2019 - 2023**
Organiser, Ambassador, Bucharest Model NATO, Bucharest, Romania **Jan 2017 - Dec 2021**

TECHNICAL PROJECTS

Medical Illnesses Matching Application, NYIT, New York, NY **September - December 2020**

- Designed Salvex, a medical project for IOS, Android, and the web, that provides potential diagnoses by analyzing user symptoms and matching them to a John Hopkins and Columbia Medical database;
- Deployed a COVID-19 news section, with a map tracking system that updates users on the relative number of cases and hospital capacity in a selected area;
- Managed the project implementation and co-wrote the UI and backend;
- Used HTML and CSS to structure the UI and JavaScript to request data from resources and to structure data according to the back-end design, and used React Native to deploy a final product.

Student Mentor Application NYIT, New York, NY **September - December 2020**

- Managed the implementation of agile technology for connecting current students and alumni and prioritizing questions in terms of relative frequency;
- Utilized PHP and HTML to code a website with all necessary functionalities, like buttons, links, and text fields;
- Designed user interface using CSS, JavaScript, and Bootstrap following modern design philosophies;
- Developed the algorithm to connect the backend to PHP by calling on specific data tables or columns with SQL queries;
- Championed the use SQL on phpMyAdmin for storing and retrieving the necessary data.

NFC Attendance, NYIT, New York, NY **January - May 2020**

- Led a student team in designing and implementing a sign-in app for students and professors to collect attendance, assign work, grade assignments and report weekly class news, ensuring multiple sections of

classes stay independent;
- Conducted rigorous UI and application testing across multiple classes of over 200 students and 50 professors;
- Wrote the first pages of the app, created & populated the database queries to implement the SQLite database for the app.