

# Liviu-Daniel ȘTEFAN

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## About

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Liviu-Daniel Ștefan is a PhD candidate with the Faculty of Electronics, Telecommunications and Information Technology, Polytechnic University of Bucharest (UPB), and a researcher with the AI Multimedia Lab, CAMPUS Research Center, UPB, Romania. His research interests cover deep learning for multimedia classification, and multimedia / video / image processing and analysis for various applications, e.g., video surveillance, medical diagnosis, etc. He has been a member of the organizing team for several benchmarking campaigns (e.g., ChaLearn ICPR Multimedia Information Processing for Personality & Social Networks Analysis Challenge), conferences (e.g., ACM ICMR 2017, ICPR workshops 2018, CLEF 2021) and part of the research team of several Romanian/EU funded research projects.

## Experience

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### Researcher

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Responsible with the research and development of AI modules and systems.

- 2020–2024: Project H2020 AI4Media. “A European Excellence Centre for Media, Society and Democracy”;
- 2020–2022: Project SMARTRetail. “Enhancing and Improving Customer Experience and Services in Supermarkets via SMART Artificial Intelligence Powered Systems”;
- 2020–2022: Project GRAVI. “Virtual Guardian: Artificial Intelligence Powered Multi-Sensor System for Automatic Securing of Areas of Interest”;
- 2020 April–2020 July: Project Hana 2. “Financial Data Augmentation and Forecasting Using Advanced AI Techniques”;
- 2020 March–2020 October: Project Keysight 1. “Machine Learning Techniques for Generating Network Traffic Data”;
- 2019 May–2019 December: Project NXP 1. “RISC V-based Hardware-Software System for Machine Learning Applications”;
- 2017–2020: Project SPIA-VA. “Technologies and Innovative Video Systems for Person Re-Identification and Analysis of Dissimulated Behavior”;
- 2017–2018: Project SPOTTER. “Real-time IP Camera-based Intelligent Video Surveillance Security System with DROP Retrieval”;
- 2016–2018: Project Erasmus+ CBHE UMETECH. “University & Media Technology for Cultural Heritage”.

## Teaching

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Responsible for several laboratories.

- 2019–2020: Computer Vision Fundamentals, postgraduate cycle, Faculty of Electronics, Telecommunications and Information Technology, Polytechnic University of Bucharest;
- 2018–2019: Image Analysis and Processing, undergraduate cycle, Industrial Engineering and Robotics Faculty, Polytechnic University of Bucharest;
- 2016–present: Computer Programming — C language, undergraduate cycle, Faculty of Electronics, Telecommunications and Information Technology, Polytechnic University of Bucharest;
- 2016–present: Data Structures and Algorithms — C language, undergraduate cycle, Faculty of Electronics, Telecommunications and Information Technology, Polytechnic University of Bucharest.

## Education

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- 2019 September–2020 September: Entrepreneurship training courses, Polytechnic University of Bucharest, Romania;

- 2017 November 6–15: Innovation challenge for PhD Students And Researchers, EIT Raw Materials Academy, Trento, Italy;
- 2017 February–2017 July: Researcher at University of Applied Sciences Western Switzerland, Institute of Information Systems of the HES-SO Valais-Wallis, MedGIFT Lab, Sierre, Switzerland;
- 2016–present: PhD studies in electronic engineering telecommunications and information technologies, Polytechnic University of Bucharest, Faculty of Electronics, Telecommunications and Information Technology, Romania;
- 2014–2016: Master's degree in multimedia technologies in biometrics and information security applications, Polytechnic University of Bucharest, Faculty of Electronics, Telecommunications and Information Technology, Romania;
- 2009–2012: Bachelor's degree in economics, Faculty of Economics, Bucharest, Romania.

## Awards

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2017: *Finding and Classifying Tuberculosis Types for a Targeted Treatment*, in the ImageCLEFtuberculosis task. The goal of this task was to assess the probability of a TB patient having resistant form of tuberculosis based on the analysis of chest CT scan — best run ranked 3rd out of 23 runs.

## Papers reviewer / subreviewer

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## Journals

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- IEEE Transactions on Affective Computing;
- MDPI Sensors–Open Access Journal;
- Scientific Bulletin of Polytechnic University of Bucharest, Series C, Electrical Engineering and Computer Science.

## Conferences

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- ACM International Conference on Multimedia (ACMMM) [2019, 2020];
- European Conference on Information Retrieval (ECIR) [2020];
- International Symposium on Multimedia (ISM), [2019];
- International Conference on MultiMedia Modeling (MMM) [2019];
- IEEE International Conference on Artificial Intelligence and Virtual Reality (IEEE AIVR) [2019];
- Multimedia Evaluation Benchmark Workshop (MediaEval) [2018];
- International Workshop on Research & Innovation for Secure Societies (RISS) [2019].

## Scientific committees

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- 2021: Member in the organizing committee for the Conference and Labs of the Evaluation Forum (CLEF) 2021;
- 2020: Member in the organizing committee for the ImageCLEFdrawnUI task, ImageCLEF, part of the Conference and Labs of the Evaluation Forum (CLEF);
- 2019: Member in the organizing committee for the Predicting Media Memorability Task - MediaEval Benchmarking Initiative for Multimedia Evaluation;
- 2018: Co-organizer of the International Conference on Pattern Recognition (ICPR), Multimedia Information Processing for Personality & Social Networks Analysis Challenge;
- 2017: Member in the organizing committee of the ACM International Conference on Multimedia Retrieval (ICMR).

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## National Research Projects

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- 2020–2022: researcher, project SMARTRetail. “Enhancing and Improving Customer Experience and Services in Supermarkets via SMART Artificial Intelligence Powered Systems”, owner Softrust Vision Analytics, partner Polytechnic University of Bucharest, funded by UEFISCDI, Industry Transfer Axis, grant PN-III-P2-2.1-PTE-2019-0055 (budget ~340k Eur);
- 2020–2022: researcher, project GRAVI. “Virtual Guardian: Artificial Intelligence Powered Multi-Sensor System for Automatic Securing of Areas of Interest”, owner Softrust Vision Analytics, partner Polytechnic University of Bucharest, funded by UEFISCDI, Industry Transfer Axis, grant PN-III-P2-2.1-PTE-2019-0570 (budget ~350k Eur);
- 2017–2020: researcher, project SPIA-VA. “Technologies and Innovative Video Systems for Person Re-Identification and Analysis of Dissimulated Behavior”, owner Polytechnic University of Bucharest, partners UTI Grup, Romanian Ministry of National Defence — Military Equipment and Technologies Research Agency, public beneficiary Protection and Guard Service, funded by UEFISCDI, Solutions Axis, grant 2SOL/2017 (budget ~2.2M Eur);
- 2017–2018: researcher, project SPOTTER. “Real-time IP Camera-based Intelligent Video Surveillance Security System with DROP Retrieval”, owner Polytechnic University of Bucharest, partner UTI Grup, funded by UEFISCDI, PED Axis, grant 30PED/2017 (budget ~140k Eur).

## International Research Projects

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- 2020–2024: researcher, project H2020 AI4Media. “A European Excellence Centre for Media, Society and Democracy”, owner CERTH, Greece, partner Polytechnic University of Bucharest, axis H2020 ICT-48-2020 / Towards a vibrant European network of AI excellence centres (budget ~12M Eur);
- 2016–2018: researcher, project Erasmus+ CBHE, UMETECH. “University & Media Technology for Cultural Heritage”, owner University of Florence, Italy, partner Polytechnic University of Bucharest (budget ~900k Eur).

## Industry Projects

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- 2020 March–2020 October: researcher, project Keysight 1. “Machine Learning Techniques for Generating Network Traffic Data”, owner Polytechnic University of Bucharest, CAMPUS Research Institute, beneficiary Keysight Technologies Romania (budget ~59k Eur);
- 2020 April–2020 July: researcher, project Hana 2. “Financial Data Augmentation and Forecasting Using Advanced AI Techniques”, owner “Polytechnic” Research, Development and Innovation Institute, beneficiary Hana Institute of Technology, Republic of Korea;
- 2019 May–2019 December: researcher, project NXP 1. “RISC V-based Hardware-Software System for Machine Learning Applications”, owner Polytechnic University of Bucharest, CAMPUS Research Institute, beneficiary NXP Semiconductors Romania (budget ~136k Eur).

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## Book chapters

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2. Ionescu, B., Müller, H., Péteri, R., Abacha, A. B., Datla, V. V., Hasan, S. A., ... Constantin, M. G. (2020). Overview of the ImageCLEF 2020: Multimedia Retrieval in Medical, Lifelogging, Nature, and Internet Applications. In *Experimental IR Meets Multilinguality, Multimodality, and Interaction - 11th International Conference of the CLEF Association, CLEF 2020, Thessaloniki, Greece, September 22-25, 2020, Proceedings* (Vol. 12260, pp. 311–341). Springer. [https://doi.org/10.1007/978-3-030-58219-7\\_22](https://doi.org/10.1007/978-3-030-58219-7_22)
1. Ionescu, B., Müller, H., Péteri, R., Dang-Nguyen, D.-T., Zhou, L., Piras, L., ... Constantin, M. G. (2020). ImageCLEF 2020: Multimedia Retrieval in Lifelogging, Medical, Nature, and Internet Applications. In *Advances in Information Retrieval - 42nd European Conference on IR Research, ECIR 2020, Lisbon, Portugal, April 14-17, 2020, Proceedings, Part II* (Vol. 12036, pp. 533–541). Springer. [https://doi.org/10.1007/978-3-030-45442-5\\_69](https://doi.org/10.1007/978-3-030-45442-5_69)

## International journal papers

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1. Constantin, M. G., Ștefan, L. D., Ionescu, B., Demarty, C., Sjöberg, M., Schedl, M., & Gravier, G. (2020). Affect in Multimedia: Benchmarking Violent Scenes Detection. *IEEE Transactions on Affective Computing*, ISI Impact Factor 6.3. <https://doi.org/10.1109/TAFFC.2020.2986969>

## International conference papers

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6. Ștefan, L.-D., Abdulamit, Ș., Dogariu, M., Constantin, M. G., & Ionescu, B. (2020). Deep learning-based person search with visual attention embedding. In *2020 13th International Conference on Communications (COMM)* (pp. 303–308). IEEE.
5. Dogariu, M., Ștefan, L.-D., Constantin, M. G., & Ionescu, B. (2020). Human-Object Interaction: Application to Abandoned Luggage Detection in Video Surveillance Scenarios. In *2020 13th International Conference on Communications (COMM)* (pp. 157–160). IEEE.
4. Ștefan, L.-D., Constantin, M. G., & Ionescu, B. (2020). System Fusion with Deep Ensembles. In *Proceedings of the 2020 International Conference on Multimedia Retrieval, ICMR 2020, Dublin, Ireland, June 8-11, 2020* (pp. 256–260). ACM. <https://doi.org/10.1145/3372278.3390720>
3. Constantin, M. G., Ștefan, L. D., & Ionescu, B. (2020). DeepFusion: Deep Ensembles for Domain Independent System Fusion. *27th International Conference on Multimedia Modeling (MMM)*.
2. Mitrea, C. A., Constantin, M.-G., Ștefan, L.-D., Ghenescu, M., & Ionescu, B. (2018). Little-big deep neural networks for embedded video surveillance. In *2018 International Conference on Communications (COMM)* (pp. 493–496). IEEE.
1. Ștefan, L., Mironică, I., Mitrea, C. A., & Ionescu, B. (2017). End to end very deep person re-identification. In *2017 International Symposium on Signals, Circuits and Systems (ISSCS)* (pp. 1–4).

## Working notes papers

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4. Fichou, D., Berari, R., Brie, P., Dogariu, M., Ștefan, L. D., Constantin, M. G., & Ionescu, B. (2020). Overview of ImageCLEFdrawnUI 2020: The Detection and Recognition of Hand Drawn Website UIs Task. In *CLEF2020 Working Notes* (Vol. 2696, pp. 1–12). Thessaloniki, Greece: CEUR-WS.org.

3. Stefan, L.-D., Cid, Y. D., Toro Oscar Alfonso Jiménez, Ionescu, B., & Müller, H. (2017). Finding and Classifying Tuberculosis Types for a Targeted Treatment: MedGIFT-UPB Participation in the ImageCLEF 2017 Tuberculosis Task. In *Working Notes of CLEF 2017 - Conference and Labs of the Evaluation Forum, Dublin, Ireland, September 11-14, 2017* (Vol. 1866). CEUR-WS.org. Retrieved from [http://ceur-ws.org/Vol-1866/paper\\_152.pdf](http://ceur-ws.org/Vol-1866/paper_152.pdf)
2. Stefan, L.-D., Ionescu, B., & Müller, H. (2017). Generating Captions for Medical Images with a Deep Learning Multi-hypothesis Approach: ImageCLEF 2017 Caption Task. In *Working Notes of CLEF 2017 - Conference and Labs of the Evaluation Forum, Dublin, Ireland, September 11-14, 2017* (Vol. 1866). CEUR-WS.org. Retrieved from [http://ceur-ws.org/Vol-1866/paper\\_153.pdf](http://ceur-ws.org/Vol-1866/paper_153.pdf)
1. Toma, A., Stefan, L.-D., & Ionescu, B. (2017). UPB HES SO @ PlantCLEF 2017: Automatic Plant Image Identification using Transfer Learning via Convolutional Neural Networks. In *Working Notes of CLEF 2017 - Conference and Labs of the Evaluation Forum, Dublin, Ireland, September 11-14, 2017* (Vol. 1866). CEUR-WS.org. Retrieved from [http://ceur-ws.org/Vol-1866/paper\\_165.pdf](http://ceur-ws.org/Vol-1866/paper_165.pdf)