Raluca-Maria Sandu

I am currently finishing my PhD Degree in Biomedical Engineering, previously having graduated with an MSc in the same field and a BSc in Control Engineering and Applied Informatics. My research interests are machine learning, computer vision, statistics, and robotics applied in the med-tech field.

EDUCATION

University of Bern, ARTORG Center for Biomedical Engineering
PhD in Biomedical Engineering   MAY 2017 – FEB 2021
My project was part of a European Innovative Training Network (HiperNav) funded through a Marie Skłodowska-Curie grant.
Thesis: "*Quantitative assessment of ablation treatments for liver tumours – image-based efficacy analysis and predictive modelling*".

RWTH Aachen University, Faculty of Medicine
MSc in Biomedical Engineering   OCT 2014 – MAR 2017
Thesis: *"Image Segmentation and Semantic Description: Tools and Analytics"* conducted at Philips Research Eindhoven, NL
Thesis Project Grade: 100%; GPA: 83%

POLITEHNICA University of Bucharest
BSc in Control Eng. and Applied Informatics   OCT 2010 – JUL 2014
Thesis: "*Volumetric Capnography Respiratory Signals for Spontaneously Breathing Subjects*" in collaboration with Philips Research Eindhoven, NL
Thesis Project Grade: 98%; GPA: 83%

WORK EXPERIENCE

Philips Research Eindhoven, Personal Care and Wellness Department
Research & Development Graduate Student JUL 2016 – MAR 2017 (9 months)
- ✓ Designed and developed a web-based application for image annotation
- ✓ Applied image processing techniques and machine learning algorithms for classification and semantic segmentation of skin surface structures

Research & Development Intern   APR 2016 – JUN 2016 (3 months)
- ✓ Utilized image processing techniques to extract features that measure the influence of skin appearance of various diets followed by subjects

Helmholtz-Institute for Biomedical Engineering, RWTH Aachen
Student Research Assistant   JAN 2016 - MARCH 2016 (3 months)
- ✓ Signal processing of cardiac signals to optimize ventricular assist devices

Joint Research Centre for Computational Biomedicine, RWTH Aachen
Student Research Assistant   NOV 2014 – JUL 2015 (9 months)
- ✓ Analysed interactions between cancer cell lines using MATLAB

Philips Research Eindhoven, Personal Health Department
Research & Development Intern   JUL 2013 – OCT 2013 (4 months)
- ✓ Used signal processing methods and extracted physiological features from respiratory signals of healthy and diseased patients

Research & Development Intern   JUL 2012 – SEP 2012 (3 months)
- ✓ Implemented data mining techniques for analysis of physiological signals of chronic heart failure patients' part of telemonitoring study

CONTACT

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Website: raluca-san.github.io

GitHub: github.com/raluca-san

LinkedIn: linkedin.com/in/rmsandu

TECHNICAL SKILLS

- ✓ Data Science
- ✓ Machine Learning
- ✓ Python (numpy, scikit-learn, pandas, matplotlib, seaborn)
- ✓ R (lsmeans, lme4, ggplot2)
- ✓ MATLAB
- ✓ Git (GitHub, Bitbucket)
- ✓ Bash, Linux
- ✓ HTML, CSS, JavaScript
- ✓ Django Web Framework
- ✓ SQL
- ✓ C/C++/C# (OOP)
- ✓ Graphic Design (InkScape, Gimp)
- ✓ Scientific Writing

SOFT SKILLS

- ✓ Resourcefulness
- ✓ Empathy
- ✓ Independent Learner
- ✓ Communication
- ✓ Positive Reinforcement
- ✓ Public Speaking

LANGUAGES

English: Fluent (C1)

German: Intermediate (B2)

French: Intermediate (B1)

Romanian: Native

RESEARCH OUTPUT

Peer-Reviewed Journal Publications

- ✓ Frontiers in Oncology, Cancer Imaging and Image-directed Interventions, JAN 2021
  "*Volumetric Quantitative Ablation Margins for Assessment of Ablation Completeness in Thermal Ablation of Liver Tumours*" (**R.M. Sandu**, I. Paolucci, R. Sznitman, S. Weber, P. Tinguely)
- ✓ IEEE Open Journal of Engineering in Medicine and Biology, FEB 2020
  "*Ultrasound based planning and navigation for non-anatomical liver resections — an ex-vivo study.*" (I. Paolucci, **R.M. Sandu**, L. Sahli, G.A. Prevost, D. Candinas, A. Lachenmayer)

Book Chapter

- ✓ Liver Pathology, Intechopen, OCT 2019
  "*Stereotactic Image-Guidance for Ablation of Malignant Liver Tumors.*" (I. Paolucci, **R.M. Sandu**, P. Tinguely, S. Weber, A. Lachenmayer)

Conference Publications

- ✓ IEEE Engineering in Medicine and Biology Society (EMBS) International Student Conference, NOV 2019, Magdeburg (Germany)
  "*Quantitative Volumetric Assessment of CT-guided Ablation Treatments for Colorectal Liver*" (**R.M. Sandu**, I. Paolucci, J. Freedman, P. Tinguely, S. Weber)
- ✓ 31st Conference of the international Society for Medical Innovation and Technology (iSMIT), OCT 2019, Heilbronn (Germany)
  "*Quantitative Volumetric Assessment of Percutaneous Ablation Treatments for Colorectal Liver Metastases.*" (**R.M. Sandu**, I. Paolucci, J. Freedman, P. Tinguely, S. Weber)
- ✓ CURAC - 18th Annual Meeting of the German Society for Computer- and Robot-Assisted Surgery, SEP 2019, Reutligen (Germany)
  "*Quantitative volumetric assessment of percutaneous image-guided microwave ablations for colorectal liver metastases*" (**R.M. Sandu**, I. Paolucci, J. Freedman, P. Tinguely, S. Weber)
- ✓ CURAC - 17th Annual Meeting of the German Society for Computer- and Robot-Assisted Surgery SEP 2018, Leipzig (Germany)
  "*A Framework for The Quantitative Assessment of Image-guided Percutaneous Ablation of Hepatic Lesions*" (R. Hrabuska, **R.M. Sandu**, I. Paolucci, S. Weber)

Public Speaking/Conference Talks

- ✓ ECALSS Congress (European Computer Assisted Liver Surgery Society), OCT 2019
  "*Quantitative ablation – Methodology and Results from the MAVERRIC Study*" (Conference Talk)
- ✓ Maurice E. Müller Memorial Event at Inselspital Bern, MAR 2018
  "*Minimally Invasive Treatment of Liver Tumours*" (Invited Speaker)

LANGUAGE CERTIFICATES

- ✓ German Language classes undertaken at the University of Bern until B2.2 level, (2017-2019)
- ✓ Zertifikat Niveau B1, Sprachenzentrum der RWTH Aachen, score 95%, SEP 2015
- ✓ Certificate in Advanced English CAE, University of Cambridge ESOL, grade A, JUN 2009
- ✓ Diplôme d'études en langue française DELF B1, score 80%, FEB 2009

EXTRACURRICULAR CERTIFICATES

- ✓ Good Clinical Practice (GCP) Certificate, CTU Bern, FEB 2019
  Clinical Investigators I: Basic GCP & clinical research training Course
- ✓ Erasmus Mobility Placement Grant for Internship at Philips Research Netherlands, JUN 2012
- ✓ Artificial Intelligence Course in partnership with Stanford School of Engineering, DEC 2011
  Completed in the top 25% of the class with a score of 95.1%.

HOBBIES

- ✓ Volunteering
  Vice-President Local Committee IAESTE Bern, Switzerland (https://www.iaeste.ch/en/)
- ✓ Hiking, Skiing, Snowboarding, Surfing