# Raluca-Maria Sandu

I am currently finishing my PhD Degree in Biomedical Engineering, previously having graduated with an MSc in Biomedical Engineering and a BSc in Control Engineering and Applied Informatics. My research is at the interface of computer-assisted systems and focuses on developing solutions that can improve the diagnosis and treatment in healthcare using machine learning, data mining, statistics, and robotics.

## EDUCATION

**University of Bern, ARTORG Center for Biomedical Engineering**
***Ph.D. in Biomedical Engineering*** MAY 2017 – JAN 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 Engineering and Applied Informatics*** OCT 2010 – JUL 2014
Thesis: "*Volumetric Capnography Respiratory Signals for Spontaneously Breathing Subjects*" conducted at Philips Research Eindhoven, NL
Thesis Project Grade: 98%
GPA: 83% (Ranked 46 out 202 graduates)

## 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 2D image annotation. Built image processing and machine learning algorithms for classification of anatomical skin surface structures (semantic segmentation).
**Philips Research Eindhoven,** Personal Care and Wellness Department
*Research & Development Intern* APR 2016 – JUN 2016 (3 months)
Applied image processing to extract physiological features that measure the effect of a specific diet on skin.
**Joint Research Centre for Computational Biomedicine,** RWTH Aachen
*Student Research Assistant (HiWi)* NOV 2014 – JUL 2015 (9 months)
Analysed interactions between cancer cell lines.
**Philips Research Eindhoven,** Personal Health Department
*Research & Development Intern* JUL 2013 – OCT 2013 (4 months)
Implemented signal processing for respiratory signals feature extraction.
**Philips Research Eindhoven,** Personal Health Department
*Research & Development Intern* JUL 2012 – SEP 2012 (9 months)
Implemented data mining techniques for chronic heart failure patients.

## CONTACT

**E-mail:** raluca-sandu@rwth-aachen.de
**Website:** raluca-san.github.io
**GitHub:** github.com/raluca-san
**LinkedIn**: linkedin.com/in/rmsandu

## TECHNICAL SKILLS

- ✓ Data Science
- ✓ Machine Learning
- ✓ Signal & Image Processing
- ✓ Statistical Analysis
- ✓ Python
- ✓ RStudio
- ✓ MATLAB
- ✓ Git (GitHub, Bitbucket, GitLab)
- ✓ Bash
- ✓ HTML, CSS, JavaScript,
- ✓ SQL
- ✓ C/C++/C#

## OTHER SKILLS

- ✓ Graphic Design (InkScape, Gimp)
- ✓ Presentation Design
- ✓ Scientific Writing

## LANGUAGES

**English:** Fluent (C1)
**German:** Intermediate (B1)
**French:** Intermediate (B1)

## RESEARCH OUTPUT

**Peer-Reviewed Journal Publications**

- ✓ Frontiers in Oncology, Cancer Imaging and Image-directed Interventions, OCT 2020 (accepted)
  "*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**

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

## CERTIFICATES

- ✓ 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%.
- ✓ Zertifikat Niveau B1, Sprachenzentrum der RWTH Aachen, SEP 2015, score 95%
  German Language classes undertaken at the University of Bern (2017-2019) until C1 level.
- ✓ Erasmus Mobility Placement Grant for Internship at Philips Research Netherlands, JUN 2012
- ✓ Certificate in Advanced English CAE, University of Cambridge ESOL, JUN 2009, grade A
- ✓ Diplôme d'études en langue française DELF B1, FEB 2009, score 80%

## HOBBIES

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