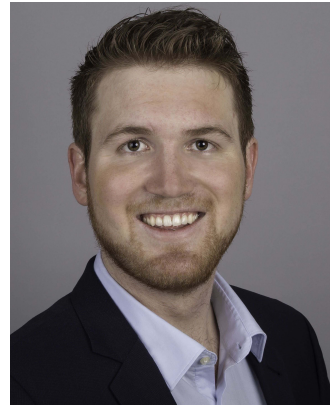# Philippe
Richard Raisin

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in *praisin*

Education

Sep. 2017   **MSc Physics**, *University of Bern*, Switzerland.
Summa Cum laude (grade : 5.83/6)

2015   **BSc Physics (Minor in Mathematics)**, *University of Bern*, Switzerland.
Magna Cum Laude (grade: 5.09/6), first year completed at ETH Zurich, Switzerland (grade: 5.00/6)

2010   **High School Diploma**, *Gymnasium Thun-Schadau*, Switzerland.
awards for best thesis and top GPA (grade: 5.68/6)

Experience

May 2018 - ongoing   **TFE Energy GmbH, Munich**, *Product manager*.
As part of a multinational team, I am leading the product development of Village Data Analytics (VIDA), a software supported by the European Space Agency (ESA). VIDA is an AI-powered, automated satellite imagery analysis tools to characteriste un-electrified rural African villages. The goal of this decision making tool is to help end energy poverty for the +1bn people who do not have access to adequate energy. www.villagedata.io
Tasks:
- Communication with ESA and technical partners
- Coordinating technical development and manage initial customers
- Regular communication with actors in the renewable energy sector in Asia and Africa as well as satellite imagery analysis companies worldwide
- Travels to Africa and South Asia to develop partnerships

Apart from these duties, I also work on consulting projects both with German as well as international companies and organisations around energy access and renewable value chains.

May 2018 - ongoing   **8photonics, Bern**, *Co-founder*.
I work with a start-up which offers a modular platform to prototype and build novel lasers. The product is sold to research labs and laser companies. At the heart of this start-up is a patented technology which I developed during my master's thesis. I advise the team on marketing, tech development and strategy. www.8photonics.com

Jun. 2017 - Dec. 2017   **ARTORG Center for Biomedical Engineering Research (University of Bern)**, *Student researcher*.
Implemented deep learning strategies in Python to estimate the applied energy during selective retina therapy (SRT) treatment from direct M-scan optical coherence tomography (OCT) data.
Tasks:
- Statistic characterization, filtering and annotation of a large multi-parameter experimental dataset
- Formulation of deep learning task for a highly explorative project and choice of appropriate neural network architectures
- Implementation and performance analysis of CNNs in Keras/Tensorflow in Python on a state-of-the-art GPU cluster using Docker

Dec. 2014 - Oct. 2017	**AME Ltd.**, *Co-founder.* Startup company developing polymer optics for Terahertz radiation. Key duties: ○ Setting up and operating a state-of-the-art Terahertz time-domain spectrometer (THz-TDS) laser experiment for R&D projects ○ Scientific data analysis in Python and LabVIEW, reviewing simulation results and mechanical designs ○ Communication with customers, shipping agents, sponsors, university officials and research groups ○ Co-authoring grant applications, market reports, product data sheets and giving scientific and outreach talks
April 2015- February 2017	**Laser Physics Division, Institute of Applied Physics (University of Bern)**, *Master thesis* . Development of an intrinsically stable, broadband fiber laser source around 1um for high-fidelity metrology. Tasks: ○ Numerical simulation of a fiber laser optimized towards having a highly stable power output over time ○ Development of a novel framework for setting up fiber laser experiments in a controlled laboratory environment (patent pending) ○ Time-series analysis in Matlab to quantify the long-term stability of the laser ○ Presentation of the results at an international conference and lead author of a market research report detailing the viability of the developed technology for commercialization. This also involved working directly with patent attorneys and the office for technology transfer at University of Bern. Granted funding to submit a patent application.
Oct. 2016 - Dec. 2016	**APRI Advanced Photonics Research Institute, Gwangju Institute of Science and Technology (South Korea)**, *Student researcher.* Feasibility study for manufacturing of all-fiber pump strippers for high-power fiber lasers used in laser based manufacturing, space- and defence applications. Performed tasks: ○ In-depth review of existing literature on the topic and decision on the best technology to manufacture the desired laser components ○ Commission and verification measurements of initial batch of components manufactured with a custom-built CO_2 laser ablation system by a major Korean fiberoptics company ○ LabVIEW programming of an optical fiber characterization imaging device including implementation of a clustering algorithm for efficient image processing

Jan. 2013 - Jun. 2014	**Laser Physics Division, Institute of Applied Physics (University of Bern)**, *Student researcher.*
	○ Design and testing of a low-cost, easy-to-use all-in fiber device for ultrashort laser-pulse monitoring. The main tasks were:
	  – Improving the electrical and mechanical design of the detector and specifying the delivery optics
	  – Working with state-of-the-art ultrafast laser to test the device, including hands-on software development in LabVIEW to control the lab equipment and automate the testing procedure as well as data analysis in Matlab
	○ Design and operation of a high-precision refractive index mapping instrument for quality control of prototypes of novel optical fibers. Duties and outcomes:
	  – Development of instrument and analysis software in LabVIEW/Matlab
	  – Defining calibration procedure for reproducible measurements
	  – Analysis of specialty samples for various international partner laboratories
	○ Presenting work on numerous professional and outreach events and guiding visiting groups around the laboratories

Jul. - Aug. 2013	**Empa, Laboratory for Mechanics of Materials and Nanostructures (Switzerland)**, *Student researcher.* Design and implementation of a multi-sample stage for X-ray diffraction (XRD) measurement automation. Duties: ○ CAD design of a sample stage according to instrument constraints and needs from users ○ Development of automation software in C# and LabVIEW for the XRD instrument
Jan. - Aug. 2012	**Empa, Laboratory for Mechanics of Materials and Nanostructures (Switzerland)**, *Intern.* Main tasks: ○ Analysis of experimental thin-film as well as bulk samples on a state of the art glow-discharge optical emission spectroscopy (GD-OES) instrument. ○ Development of a database software for simplified calibration of said instrument using LabVIEW and SQL. The software was presented on an international research conference

Skills

Programming	Python (Deep learning: Keras/TF), Matlab, LabVIEW, C++ (basics), git, LaTeX
Modelling tools	QGIS, Autodesk Inventor, RP Fiber Power, Lumerical MODE & Interconnect
certified MOOCs	CSMM.102x: Machine Learning (ColumbiaX); Phot1x: Silicon Photonics Design, Fabrication and Data Analysis (UBCx)

Languages

Native	German
Fluent	English - CAE C1 (grade: A)
Intermediate	French - B2
Basic	Spanish

Outreach, competitions & projects (selection)

2018   **Session at the Renewable Energy India Expo 2018**, *Greater Noida, India*.
At TFE Energy, I was responsible for organizing a session titled *Embracing Digitalisation of Energy through Data an Technology* at Indias largest Renewable Energy Fair. Speakers were from IABG, IBM, ABB and Climate-Connect

2017   **Blog post on 3D printing for atmospheric remote sensing instrumentation**.
Project involved development and testing of a 3D printed calibration target for atmospheric sciences with AME Ltd. and University of Bern. `https://formlabs.com/blog/building-the-next-generation-of-calibration-units-with-3d-printing`

2016   **CTI Outreach Talk on Entrepreneurship**, *University of Bern*.
Co-speaker on behalf of AME Ltd. to advertise for on-campus entrepreneurship, supported by the Swiss Federal Commission for Technology and Innovation (CTI)

2015   **CTI Entrepreneurship course**, *University of Bern*.
Co-speaker at one lecture on financing and business planning on behalf of AME Ltd. in the framework of the CTI Entrepreneurship Training

2015   **Bernese Business Creation Competition**, *organized by the Institute for Marketing and Management, University of Bern*.
Awarded first prize in business plan competition with AME Ltd., involved writing of a business plan as well as a public talk

2015   **Awarded funding for AME Ltd. under the NCCR MUST Industrial project programme**.
Successful application for seed funding for AME Ltd. awarded by one of the Swiss National Centres of Competence in Research (NCCR). Project name: *Low-cost additive manufacturing of polymeric components for THz applications: LAMPTA*

2014   **160kW solar power system**, *Gymnasium Schadau, Thun*.
Successfully initiated a project to install a rooftop solar power system ($>1000m^2$, 160kW) powering my former high school

2010   **Schweizer Jugend Forscht (national youth science competition)**, *hosted by University of Basel, Switzerland*.
Thesis title: *Sulfur-deprivation induced photo-biological production of hydrogen gas in the unicellular green algae Chlamydomonas reinhardtii*, supported by the Swiss Federal Institute of Aquatic Science and Technology (eawag)

Research output

Patents

[1]   **Raisin**, P., Bacher, C., Luder, A., Jenk, A., and Ryser, M. Modular system for secure and controlled arrangement of optical fibres and components of an optical system. *WIPO 2019/016001*, 2019.

Peer-reviewed papers

[2] Jacob, K., Schroeder, A., v. Werra, L., Reinhard, F., **Raisin**, P., and Murk, A. Radiometric characterization of a water-based conical blackbody calibration target for millimeter-wave remote sensing. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, pages 1–9, 2019.

[3] Fountoukidou, T., **Raisin**, P., Kaufmann, D., Justiz, J., Sznitman, R., and Wolf, S. Motion-invariant srt treatment detection from direct m-scan oct imaging. *International Journal of Computer Assisted Radiology and Surgery*, Mar 2018.

Talks

[4] **Raisin**, P., Ryser, A., von Werra, L., and Reinhard, F. Towards new polymer-based components for THz-applications . In *NCCR MUST annual meeting*, Engelberg, Switzerland, 2016.

[5] **Raisin**, P., Ryser, M., and Romano, V. High-precision confocal reflection measurement for two dimensional refractive index mapping of optical fibers . In *SPIE Photonics Europe*, Prague, Czech Republic, 2015.

Conference proceedings

[1] Ryser, M., Bacher, C., **Raisin**, P., Paardekooper, D., Feurer, T., and Romano, V. Self-optimization and oscillation state mapping of polarization additive pulse mode-locked fiber laser . In *Conference on Lasers and Electro-Optics (CLEO)*, San Diego, USA, 2017.

[2] **Raisin**, P., Ryser, M., Romano, V., and Feurer, T. Towards an intrinsically stable all-fiber low-power broadband source at 1 um . In *Europhoton*, Vienna, Austria, 2016.

[3] **Raisin**, P., Frey, D., and Michler, J. Easy CRM selection software for GD-OES . In *GD-Day*, Paris, France, 2012.

References

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