CURRICULUM VITAE

Benjamin Hendricks, PhD

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Profile

I am a multidisciplinary researcher with professional experience in software engineering, bioacoustics, and physics. I develop software for signal processing and big data analysis. I have worked in industry, research and education, partnering with a diverse group of collaborators. I am at my best in dynamic, solution-oriented environments. I have a passion for marine wildlife and seek projects linked to marine science and conservation.

Professional Experience

SoundSpace Analytics — Cumberland, Canada
Principal — *since Jan '20*
SoundSpace Analytics is a consultancy and the provider of scientific software and services. It specializes in the automated processing and analysis of underwater soundscapes for custom-tailored applications. I am the sole proprietor.

World Wildlife Fund & University of Victoria — Victoria, Canada
Software Engineer, Mitacs Postdoctoral Fellow — *Jan '17 – Aug'19*
Project: "*Automated Localization of Marine Mammals with Long Baseline Hydrophone Arrays*"

- I designed and implemented software tools for acoustic soundscape analysis and in particular to detect, classify, and localize cetacean vocalizations. The multidisciplinary project combined oceanography, bioacoustics, signal processing, software development, and field work.

Herzberg Institute of Astrophysics — Victoria, Canada
Research Associate — *Jan '12 – Aug '12*
Project: "*Continuum Variability in the Spectra of Deeply Embedded Protostars*"

- I developed numerical routines to simulate the heat transfer within stars. I published the results as a co-author of an article in The Astrophysical Journal.

Education

Ruprecht-Karls Universität Heidelberg — Heidelberg, Germany
PhD in Physics & Astronomy — *Oct '12 – Nov '15*
Thesis: *"Reading the Chemical Evolution of Stellar Populations in Dwarf Spheroidal Galaxies"*

- I obtained, processed, and analyzed spectroscopic datasets for hundreds of stars in different galaxies that contributed to the understanding of the evolution of our Galaxy. I published three peer-reviewed articles in *Astronomy&Astrophysics* [1] [2] and The Astrophysical Journal.

Supervisor: Dr. Andreas Koch
Grade: A+
Awards: Ernst-Patzer Prize for best publication by junior scientist in Heidelberg

University of Victoria — Victoria, BC, Canada
MSc in Physics & Astronomy — *Jan '10 – Dec '11*
Thesis: *"A New Reddening Law for M4"*

- I processed and analyzed the images of several 100,000 stars in dense stellar systems and computed the exact interstellar extinction. I published my results in The Astronomical Journal.

Supervisors: Prof. Don VandenBerg and Dr. Peter Stetson
Course average grade: A
Awards: UVic Fellowship for academic performance

Philipps Universität Marburg MARBURG, GERMANY
1. Staatsexamen (equivalent to BEd) *Sep '06 – Jul '09*
German university degree and prerequisite for teaching physics and mathematics at high schools
Thesis: *"Investigation of Stellar Photospheres"*

- I designed and realized a new observational setup with amateur equipment to observe and analyze the spectra of close-by stars and investigated their properties.

Advisor: Prof. Andreas Schrimpf
Grade: A+

Schiller Universität Jena JENA, GERMANY
Vordiplom (equivalent to BSc) in Physics *Sep '04 – Aug '06*
Grade: A

Professional Skills

- **Advanced scientific programming** in Python and all relevant packages.

- **Analysis of large datasets** by means of own programs and operation of complex software; experience with a broad range of signal types.

- **Confident and independent project management** through all phases to realization.

- **Professional writing**, shown in many successful science and funding proposals as well as several competitive publications in professional journals and for popular science.

- **Smooth incorporation to new and complex project environments**, demonstrated by successful transition between a variety of research topics.

- **Outstanding oral academic communication**, for scientific audiences, non-experts, and the public.

- Eight years contribution to **post-secondary education**.

Science Communication

Instructional Assistant - School of Access (Math) CAMOSUN COLLEGE, VICTORIA, CANADA
since Sep '16

- Tutored students in a wide range of mathematics and statistics courses from fundamental levels up to second year university level

Outreach Fellow - Astronomy LANDESSTERNWARTE (STATE OBSERVATORY), HEIDELBERG, GERMANY
Jan '13 – Dec '15

- Founding member of a self-organized student initiative for public outreach

Teaching Assistant - Introduction to Physics RUPRECHT-KARLS UNIVERSTIÄT, HEIDELBERG, GERMANY
Oct '13 – Apr '14

- Developed a complete seminar series (12 individual classes)

Teaching Assistant - Astronomy Laboratories UNIVERSITY OF VICTORIA, VICTORIA, CANADA
Jan '10 – May '12

- Taught 6 individual groups, a full semester each
- **Awards:** Best-Teaching Award for best performance amongst all instructors

High School Teacher - Physics and Mathematics ELISABETH GYMNASIUM, MARBURG, GERMANY
Aug '09 – Nov '09

- Hold full responsibility for 4 learning groups

Teaching Assistant - Physics Laboratories PHILIPPS UNIVERSITÄT, MARBURG, GERMANY
May '07 – Jul '09

- Taught 8 individual groups, a full semester each

Selected Publications

Hendricks, B., Keen, E., Shine, C.., et al. 2021, *The Journal of the Acoustical Society of America*,149(6), pp.4264-4280
"Acoustic tracking of fin whales: habitat use and movement patterns within a Canadian Pacific fjord system"

Hendricks, B., Keen, E., Wray, J., et al. 2020, *The Journal of the Acoustical Society of America*,148(4), pp.2773-2773
"Automated localization of whales in coastal fjords"

Hendricks, B., Keen, E., Wray, J., et al. 2018, *IEEE Oceans 2018 (Kobe)*, pp. 1-10
"Automated Monitoring and Analysis of Marine Mammal Vocalizations in Coastal Habitats"

Hendricks, B., Boeche, C., Johnson, C. I., et al. 2016, *Astronomy&Astrophysics*, 585, A86
"Evidence for a Chemical Enrichment Coupling of Globular Clusters and Field Stars in the Fornax Dwarf Spheroidal Galaxy"

Hendricks, B., Koch, A., Walker, M., et al. 2014, *Astronomy&Astrophysics*, 572, A82
"Insights from the Outskirts: Chemical and Dynamical Properties in the outer Parts of the Fornax Dwarf Spheroidal Galaxy"

Hendricks, B., Koch, A., Lanfranchi, G.A., et al. 2014, *The Astrophysical Journal*, 785, 102
"The Metal-poor Knee in the Fornax Dwarf Spheroidal Galaxy"

Johnstone, D., **Hendricks, B.**, Herczeg, G.J., & Bruderer, S. 2013,*The Astrophysical Journal*, 765, 133
"Continuum Variability of Deeply Embedded Protostars as a Probe of Envelope Structure"

Hendricks, B., Stetson, P. B., VandenBerg, D. A., & Dall'Ora, M. 2012, *The Astronomical Journal*, 144, 25
"A New Reddening Law for M4"

Additional Scientific Achievements

8 contributions on international conferences

- 6 oral presentations, 2 poster presentations

Many presentations in seminars, workshops,

- including invitations for seminar talks at Harvard University and Paris Observatory, and for the Patzer-Prize Colloquium at the Max-Planck Institute in Heidelberg

4 successful telescope-time proposals on state-of-the-art research telescopes

- including competitive observing time at the *Large Binocular Telescope*, and the *Magellan Telescope*

Languages

German (*mother tongue*), English (*fluent*), French (*basic*)

Volunteering

Board of Director – Member North Coast Cetacean Society, Alert Bay, Canada
since Apr '19

- Science Advisor

Outreach Fellow - Astronomy Landessternwarte (State Observatory), Heidelberg, Germany
Jan '13 – Dec '15

- Founding member of a self-organized student team for public outreach

Team Captain - Inline-Hockey LIONS Heidelberg, Heidelberg, Germany
Sep '13 – Dec '15

Personal Interests

Sea-Kayaking, Marine Wildlife, Hockey

References

Prof. Aaron Gulliver – Project Supervisor (Mitacs Industry Collaboration) , University of Victoria, Canada
Tel: (+1) 250 721-6028 • Email: agullive@ece.uvic.ca

Hussein Alidina – Project Supervisor (Mitacs Industry Collaboration), Lead Specialist - Oceans, World Wildlife Fund, Canada
Tel: (+1) 778 229-6944 • Email: halidina@wwfcanada.org

Dr. Andreas Koch – PhD Supervisor, University of Heidelberg, Germany
Tel: +49 (0)6221 54-1841 • Email: andreas.koch@uni-heidelberg.de