

Antoine Honoré, Ph.D.






✉ antoinehonor@gmail.com






Research Area

AI Researcher with strong experience at the intersection of AI, biology and medicine. I have designed deep generative models for sepsis prediction in preterm infants from time series data. My current research focuses on multimodal data integration: protein structures, deep mutational scans and multiple sequence alignments, for variant effect prediction in drug transporter proteins.

Education




- 2018 – 2023  **Ph.D., KTH Royal Institute of Technology, Stockholm, Sweden**
AI for medical diagnostics.
Thesis title: *Perspectives of Deep Learning for Neonatal Sepsis Detection*.
- 2013 – 2016  **M.Sc. Grenoble INP PHELMMA, Grenoble, France** in Electrical Engineering.
Double degree with KTH Royal Institute of Technology, Stockholm, Sweden.
Majors: *Signal Processing, Optimization*.
- 2011 – 2013  **CPGE, Lycée Victor Grignard, Cherbourg, France**
Majors: *Mathematics and Theoretical Physics*.



Employment

- 2023 – 2025  **Postdoc**, KTH Royal Institute of Technology, Stockholm, Sweden.
Project: Predicting Chemotherapy Sensitivity using Graph Neural Networks Based on Deep Mutational Scanning
- 2023 –  **Associated researcher**, Karolinska Institutet, Stockholm, Sweden.
Project: Conducting and performing retrospective clinical studies with the neonatal transfusion network: Oxford, Charité Berlin, Karolinska Institutet
- 2016 – 2018  **Research assistant**, Karolinska Institutet, Stockholm, Sweden.








Research Publications

Journal Articles



- 1 J. Bodlund, A. Wimmerdahl, **A. Honoré**, K. P. Härenstam, and D. Forsberg, “A retrospective evaluation of SwePEWS use in paediatric patients with COVID-19 and RSV infection,” *Acta Paediatrica*, vol. n/a, no. n/a, ISSN: 1651-2227.  DOI: 10.1111/apa.17450.
- 2 A. Ghosh, **A. Honoré**, and S. Chatterjee, “DANSE: Data-driven Non-linear State Estimation of Model-free Process in Unsupervised Learning Setup,” *IEEE Transactions on Signal Processing*, pp. 1–14, 2024, ISSN: 1941-0476.  DOI: 10.1109/TSP.2024.3383277.
- 3 **A. Honoré**, D. Forsberg, K. Adolphson, S. Chatterjee, K. Jost, and E. Herlenius, “Vital sign-based detection of sepsis in neonates using machine learning,” *Acta Paediatrica*, vol. n/a, no. n/a, Jan. 2023, ISSN: 1651-2227.  DOI: 10.1111/apa.16660.

- 4 A. M. Stålhammar, **A. Honoré**, K. Adolphson, D. Forsberg, E. Herlenius, and K. Jost, "Weight a minute: The smaller and more immature, the more predictable the autonomic regulation?" *Acta Paediatrica*, vol. 112, no. 7, pp. 1443–1452, 2023, ISSN: 1651-2227.  DOI: 10.1111/apa.16796.
- 5 E. Persad, K. Jost, **A. Honoré**, *et al.*, "Neonatal sepsis prediction through clinical decision support algorithms: A systematic review," *Acta Paediatrica*, vol. 110, no. 12, pp. 3201–3226, 2021, ISSN: 1651-2227.  DOI: 10.1111/apa.16083.

Conference Proceedings


- 1 A. Ghosh, **A. Honoré**, and S. Chatterjee, "DANSE: Data-Driven Non-Linear State Estimation of Model-Free Process in Unsupervised Bayesian Setup," in *2023 31st European Signal Processing Conference (EUSIPCO)*, Sep. 2023, pp. 870–874.  DOI: 10.23919/EUSIPCO58844.2023.10289946.
- 2 **A. Honoré**, A. Ghosh, and S. Chatterjee, "Compressed Sensing of Generative Sparse-Latent (GSL) Signals," in *2023 31st European Signal Processing Conference (EUSIPCO)*, Sep. 2023, pp. 1918–1922.  DOI: 10.23919/EUSIPCO58844.2023.10289923.
- 3 **A. Honoré**, H. Siren, R. Vinuesa, S. Chatterjee, and E. Herlenius, "An LSTM-based Recurrent Neural Network for Neonatal Sepsis Detection in Preterm Infants," in *2022 IEEE Signal Processing in Medicine and Biology Symposium (SPMB)*, Dec. 2022, pp. 1–6.  DOI: 10.1109/SPMB55497.2022.10014948.
- 4 A. Ghosh, **A. Honoré**, D. Liu, G. E. Henter, and S. Chatterjee, "Robust Classification Using Hidden Markov Models and Mixtures of Normalizing Flows," in *2020 IEEE 30th International Workshop on Machine Learning for Signal Processing (MLSP)*, Sep. 2020, pp. 1–6.  DOI: 10.1109/MLSP49062.2020.9231775.
- 5 **A. Honoré**, D. Liu, D. Forsberg, *et al.*, "Hidden Markov Models for Sepsis Detection in Preterm Infants," in *ICASSP 2020 - 2020 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, May 2020, pp. 1130–1134.  DOI: 10.1109/ICASSP40776.2020.9054635.
- 6 D. Liu, **A. Honoré**, S. Chatterjee, and L. K. Rasmussen, "Powering Hidden Markov Model by Neural Network based Generative Models," in *24th European Conference on Artificial Intelligence*, Santiago de Compostela, Spain, 2020, p. 8.  DOI: arXiv:1910.05744.
- 7 **A. Honoré**, V. Siljehav, S. Chatterjee, and E. Herlenius, "Large Neural Network Based Detection of Apnea, Bradycardia and Desaturation Events," in *NIPS ML4H 2017*, Long Beach Convention Center, Long Beach, CA.: arXiv, Nov. 2017.  DOI: 10.48550/arXiv.1711.06484.

Book Chapters

- 1 **A. Honoré**, H. Siren, R. Vinuesa, S. Chatterjee, and E. Herlenius, "Deep Recurrent Architectures for Neonatal Sepsis Detection from Vital Signs Data," in *Machine Learning Applications in Medicine and Biology*, A. Ahmed and J. Picone, Eds., Cham: Springer Nature Switzerland, 2024, pp. 115–149, ISBN: 978-3-031-51893-5.  DOI: 10.1007/978-3-031-51893-5_5.
- 2 D. Forsberg, **A. Honoré**, K. Jost, *et al.*, "AIM in Neonatal and Paediatric Intensive Care," in *Artificial Intelligence in Medicine*, N. Lidströmer and H. Ashrafiyan, Eds., Cham: Springer International Publishing, 2020, pp. 1–10, ISBN: 978-3-030-58080-3.  DOI: 10.1007/978-3-030-58080-3_309-1.

Talks & Posters

Seminars & Workshops

- Nov. 2023  Visit at Biomedical Diagnosis lab, Eindhoven University of Technology, The Netherlands.
Invited talk.

Talks & Posters (continued)

- Oct. 2022 📌 “Health-related data and machine learning algorithms for healthcare”. RISE Research Institutes of Sweden, Stockholm. **Invited speaker.**
- Nov. 2019 📌 “Hidden Markov Models for Sepsis Detection in Preterm Infants”. Digitalize in Sthlm. **Poster.**

Conferences

- Sept. 2023 📌 “Compressed sensing of generative sparse-latent (GSL) signals”, European Signal Processing Conference. **Poster.**
- Dec. 2022 📌 “An LSTM-based Recurrent Neural Network for Neonatal Sepsis Detection in Preterm Infants”. 2022 IEEE Signal Processing in Medicine and Biology Symposium. **Talk (online).**
- May. 2022 📌 “Hidden Markov Models for Sepsis Detection in Preterm Infants”. 2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP). **Poster (online).**
- Dec. 2017 📌 “Large Neural Network Based Detection of Apnea, Bradycardia and Desaturation Events”. NIPS ML4H 2017, Long Beach Convention Center, Long Beach, CA. **Poster.**

Skills

- Programming 📌 Python (pandas, numpy, sklearn, pytorch+cuda, lightning), Rust, C.
- Systems 📌 GNU/Linux, Bash, Powershell, Singularity, SLURM
- Databases 📌 PostgreSQL.
- AI/ML 📌 Deep generative models: VAE, Normalizing flows; Sequence/graph models: RNN, HMM, Transformers, GCN; Theory and practice of signal processing, convex optimization.

Miscellaneous

Committee Work

- Oct. 2024 – Feb. 2025 📌 Member of the Scientific Program Committee for the 2nd Digital Futures Young Scientist Conference.




Teaching Assistant

- 2020 – 2023 📌 Speech and Audio Signal Processing (Spring).
- 2022 📌 Machine Learning and Data Science (Fall).
- 2021 – 2022 📌 Deep Neural Networks, Industry course (Spring).
- 2018 – 2019 📌 Pattern Recognition and Machine Learning (Spring).





Student Supervision

- 2024 📌 Catherine Weldone (KTH / Stanford medicine), co-supervisor.
- 2023 📌 Laura Briffa (KTH/KI), co-supervisor.
- 📌 Alma Nordenstam (KI), co-supervisor.
- 📌 Rongfei Pan (KTH/Industry), co-supervisor.
- 📌 Sarah Reichhuber (KTH), main supervisor.
- 2022 📌 Henrik Siren (KTH), main supervisor.
- 📌 Carolin Danker (KTH), co-supervisor.



Miscellaneous (continued)

- 2020  Lila van Breugel (Monash University, Australia), co-supervisor.
-  Jintai Liu (KI), co-supervisor.
- 2019  Hanna Olsson (KI), co-supervisor.

Research Programs & Grants

- 2023 – 2025  WASP-DDLS Postdoc funding.
- 2018 – 2023  KTH Digital Futures Doctoral Program.
-  Graduate School *MedBioInfo*.
- 2015  Mobility Grant *Grenoble INP PHELMA/Région Rhône-Alpes*.

Academic Review Services

- Conference  ICASSP, EUSIPCO.
- Journal  Nature communications, Acta Paediatrica.

References

Available on Request