# Manuel Gloeckler

## Personal Data


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| Place and Date of Birth: | Laichingen, Germany \| 29 May 1998 |
| Address: | Erfurter Weg 11, 72108 Rottenburg am Neckar, Germany |
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## Research Interests

My research interests lie at the intersection of machine learning, statistics, and practical scientific applications. Specifically, they include approximate Bayesian inference, neural density estimation, generative models, and probabilistic programming.

## Work Experience

**Now, Apr 2022** — **PhD student at the International Max-Planck Research School for Intelligent Systems (IMPRS-IS)**
*University Tübingen, Machine Learning in Science, Prof. Dr. Jakob Macke.*
Research on simulation-based (or likelihood-free) inference methods, specifically their robustness and efficiency.

**Feb 2022, Sep 2020** — **Research assistant**
*University Tübingen, Computational Systems Biology, Junior Prof. Dr. Andreas Dräger.*
Analysis of microbiotic interactions in the human nasal microbiome through genome-scale modeling and linear programming, supervised by Dr. Reihaneh Mostolizadeh.

**Feb 2019, Oct 2019** — **Student assistant**
*University Tübingen, Theory of Machine Learning Group, Prof. Dr. Ulrike von Luxburg.*
Teaching assistant for the undergraduate lecture "Algorithms". I gave tutorial sessions, corrected exercise sheets and exams.

## Education

**Mar 2022, Okt 2019** — **Master of Science in Bioinformatics, University Tübingen**
Strong focus on machine learning methods and theory, including probabilistic, statistical and deep machine learning, as well as its applications in life sciences
Graduation with distinction [certificate].
Thesis: *"Variational methods for simulation-based inference"* [pdf]
| Supervisor: Jakob Macke
Average grade 1.15 (3.9 GPA equivalent) | Detailed List of Courses

**Sep 2019, Okt 2016** — **Bachelor's Degree in Bioinformatics, University Tübingen**
Graduation with distinction [certificate].
Thesis: *"The landscapes of CD8+ T cell immunogenicity from a self-tolerance based perspective in sequence space"* [pdf]
| Supervisor: Oliver Kohlbacher
Average grade 1.31 (3.7 GPA equivalent) | Detailed List of Courses

**Jul 2016** — **A-levels, Joachim-Hahn-Gymnasium**
Average Grade 2.1 (3.0 GPA equivalent)

## Publications

2024 **All-in-one simulation-based inference** [arxiv]
Manuel Gloeckler, Michael Deistler, Christian Weilbach,
Frank Wood, Jakob H. Macke
Accepted as a *oral* for ICML 2024

2023 **Adversarial robustness of amortized Bayesian inference** [arxiv].
Manuel Gloeckler, Michael Deistler, Jakob H. Macke.
Accepted as a *poster* for ICML 2023

2022 **Variational methods for simulation-based inference** [arxiv].
Manuel Gloeckler, Michael Deistler, Jakob H. Macke.
Accepted as a *spotlight* for ICLR 2022.

2022 **NCMW: a python package to analyze metabolic interactions in the nasal microbiome** [frontiers].
Manuel Gloeckler, Andreas Draeger, Reihaneh Mostolizadeh

2022 **Towards the human nasal microbiome: Simulating D. pigrum and S. aureus** [frontiers].
Reihaneh Mostolizadeh, Manuel Gloeckler, Andreas Draeger

## Pre-prints

2024 **Inferring stochastic low-rank recurrent neural networks from neural data** [arxiv]
Matthijs Pals, A. Erdem Sagtekin, Felix Pei, Manuel Gloeckler, Jakob H. Macke

2024 **A practical guide to statistical distances for evaluating generative models in science** [arxiv]
Bischoff et. al (role as co-organizer)

## Other work experience

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| Conferences: | Poster + Oral presentation at ICML 2024<br>Poster presentation at ICML 2023.<br>Spotlight presentation at ICLR 2022 |
| Summer schools: | Cambridge ELLIS Machine Learning Summer School and poster presentation 2022 [certificate].<br>Machine Learning Summer School 2021 [certificate]. |
| Reviewing: | IOP trusted reviewer [certificate].<br>ICLR reviewer. |
| Tiny papers: | *Hierarchical modelling of microbial communities*<br>(M Gloeckler, A Draeger, R Mostolizadeh) [Bioinformatics] |

## Programming Languages

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| Python : | **Proficient:** Extensive experience in machine learning libraries such as PyTorch and JAX. |
| Java : | **Intermediate skills**: Successfully completed several university projects in Java. |
| CUDA/C/C++ : | **Basic skills**: Acquired foundational skills through university courses and self-study. |

## Languages

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| German: | Mother tongue |
| English: | Proficient |
| French: | B1 level |

# Master of Science in Bioinformatics

## Grades

| Course | Grade | ECTS |
|---|---|---|
| Sequence Bioinformatics | 1.0 | 9 |
| Structure and Systems Bioinformatics | 1.0 | 9 |
| Algorithms in Bioinformatics | 1.0 | 3 |
| Bioinformatics Tools | 1.0 | 3 |
| Cheminformatics | 1.0 | 6 |
| Phylogeny and Evolution | 1.0 | 6 |
| Medical Data Science | 1.3 | 6 |
| Bioinformatics Tools | 1.0 | 3 |
| Massively Parallel Computing V | 1.0 | 6 |
| Probabilistic Machine Learning | 1.0 | 9 |
| Advanced Probabilistic Machine Learning - Modeling and Applications | 1.7 | 6 |
| Advanced Artificial Neural Networks | 1.7 | 6 |
| Mathematics for Machine Learning* | 1.7 | 6(9) |
| Statistical Machine Learning* | (2.0) | (9) |
| Time Series* | (3.0) | (6) |
| Introduction to Computational Neuroscience | 1.0 | 6 |
| Computational Ecology | 1.0 | 6 |
| Advance Immunology | 2.0 | 3 |
| Astrobiology: life in extreme environments | 1.7 | 3 |
| Master thesis | 1.0 | 30 |
| | Total | 120 (138) |
| | Grade | **1.15** |

A star (*) indicates that the course was taken as an additional qualification (e.g., due to personal interest) or can only be partially accounted because of examination regulations. Official version can be found here.

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# Undergraduate Degree in Bioinformatics

## Grades

| Original Course Title (Ger) | Course (Eng) | Grade | ECTS |
|---|---|---|---|
| Informatik I | Computer Science I | 1.0 | 9 |
| Informatik II | Computer Science II | 1.0 | 9 |
| Theoretische Informatik | Theoretical computer science | 1.0 | 9 |
| Algorithmen | Algorithms | 1.0 | 9 |
| Teamprojekt | Teamproject | 1.0 | 9 |
| Grundlagen des maschinellen Lernens | Basics of machine learning | 1.3 | 6 |
| Mathematik I | Math I | 1.0 | 9 |
| Mathematik II | Math II | 2.0 | 9 |
| Mathematik III | Math III | 1.7 | 9 |
| Stochastik | Stochastic | 2.0 | 6 |
| Numerik für Mathematiker (*) | Numerics for Mathematicians | (3.3) | 9 |
| Einführung in die Bioinformatik | Introduction to Bioinformatics | 1.0 | 3 |
| Grundlagen der Bioinformatik | Basis of Bioinformatics | 1.0 | 3 |

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|---|---|---|---|
| Grundlagen der Bioinformatik (SEM) | Grundlagen der Bioinformatics Seminar | 1.0 | 3 |
| Microbiome Analysis | Microbiome Analysis | 1.3 | 6 |
| Structure-Based Drug Design | Structure-Based Drug Design | 1.0 | 6 |
| BMZ (Biomoleküle und Zelle) | Biomolecules and cells | 1.3 | 6 |
| Mol. Biol. I (Zellbiologie und Genetik) | Cell Biology and Genetics | 2.0 | 6 |
| Mol. Biol. II (Mikrobiologie) | Microbiology | 1.7 | 3 |
| Einführung in die Immunologie | Introduction to Immunology | 1.3 | 3 |
| Chemie I | Chemistry I | 2.0 | 9 |
| Allg. Biochemie | General biochemistry | 1.7 | 6 |
| Tierphysiologie (Neurobiologie) | Animal Physiology (Neurobiology) | 1.0 | 9 |
| Physik. Chemie (Chemie II) | Physical chemistry | 1.7 | 6 |
| Bachelorarbeit | Bachelor thesis | 1.3 | 15 |
| | | Total | 180 |
| | | GRADE | **1.31** |

A star (*) indicates that the course was taken as "Studium Professional", hence does not account for the overall grade. The official version can be found here.