

# Marco HEYDEN



Researcher and Ph.D. candidate in the field of data science and machine learning

## CONTACT DETAILS

📍 Mannheim, Germany  
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## EXPERTISE

### Data Science / ML:

Specializing in data stream mining, multi-armed bandits, active learning, and outlier detection

### Software Development:

Experience in commercial and open-source projects

### Engineering Background:

Bachelor's degree integrating electrical engineering, mechanical engineering, and computer science

## PROGRAMMING & SOFTWARE

Python, Java, Scala, SQL, Swift, Objective-C, C++

Git, Latex, MS Office, Databases, Idea & PyCharm, CI/CD

## SOFT SKILLS

Research, Teaching, Collaboration & Guidance, Creativity, Dedication

## LANGUAGES

German (native)  
English (fluent)  
French (school level)

## EXPERIENCE

- 2024** RESEARCH VISIT & COLLABORATION, 📍 *Victoria University of Wellington* (3 months)
  - ◇ Paper "Leveraging Plasticity in Incremental Decision Trees"
  - ◇ Published at ECML PKDD '24
- 2021–2025** RESEARCHER & PH.D. CANDIDATE 📍 *Karlsruhe Institute of Technology (KIT)*  
*Inst. for Program Structures and Data Organization (IPD)*
  - ◇ Efficient Decision Making in Data Streams under Limited Feedback
- 2020–2021** RESEARCHER & PH.D. CANDIDATE 📍 *Research Center for Information Technology (FZI)*
  - ◇ Outlier and change detection in fog and edge computing
- 2019** RESEARCH ASSISTANT, 📍 *KIT*  
*Inst. for intelligent process automation and robotics*
  - ◇ Unity applications for secure human-robot interaction
- 2018** WORKING STUDENT 📍 *Otego GmbH*
  - ◇ iOS app development in Swift
  - ◇ Software for low-power embedded devices in C++
- 2017** WORKING STUDENT, 📍 *SAP SE (IoT Enablement)*
  - ◇ Development of digital twins
- 2016–2017** INTERNSHIP AND WORKING STUDENT, 📍 *Stocard GmbH*
  - ◇ Mobile app development for iOS in Swift and Objective-C
- 2015–2016** RESEARCH ASSISTANT IN ROBOTICS, 📍 *FZI*

## EDUCATION

- 2020–now** PH.D. CANDIDATE, *IPD, KIT* (defense planned for January 2025)
- 2017–2019** M. SC. COMPUTER SCIENCE, *KIT*
  - ◇ German GPA: 1.7
- 2016** SEMESTER ABROAD, *Stellenbosch University, South Africa*
- 2013–2017** B. SC. MECHATRONICS AND INFORMATION TECHNOLOGY, *KIT*
  - ◇ German GPA: 2.5
- 2012–2013** B. SC. BIOTECHNOLOGY, *University of Applied Sciences Mannheim*

## RESEARCH (FIRST AUTHOR PUBLICATIONS)

- Heyden, M., Gomes, H. M., Fouché, E., Pfahringer, B., & Böhm, K. (2024). Leveraging Plasticity in Incremental Decision Trees. ECML/PKDD '24.
- Heyden, M., Arzamasov, V., Fouché, E., & Böhm, K. (2024). Budgeted Multi-Armed Bandits with Asymmetric Confidence Intervals. KDD '24, ACM.
- Heyden, M., Fouché, E., Arzamasov, V., Fenn, T., Kalinke, F., & Böhm, K. (2024). Adaptive Bernstein Change Detector for High-Dimensional Data Streams. Data Min. Knowl. Discov., 38(3), pp. 1334-1363.
- Heyden, M., Wilwer, J., Fouché, E., Thoma, S., Matthiesen, S., & Gwosch, T. (2022). Tandem Outlier Detectors for Decentralized Data. SSDBM '22, ACM, pp. 25:1–25:4.

## SOCIAL ENGAGEMENT

- ◇ COMMUNITY WORK, *Vlottenburg Primary School, South Africa*

## HOBBIES

- ◇ All kinds of sports (cycling, golf, gym, skiing, soccer), traveling, photography