

Summary

Software engineer and human informatics researcher. Currently wrangling location and emotion data. Previously working on real-time behavior analysis for healthcare settings. Five years of experience specializing in human-computer interaction, affective computing and data analysis. Keen to design technology that can **enhance human capabilities and experiences** by learning from human perception and behavior.

Work Experience

- since Dec 2022

Software Engineer

Kamakura, Japan

Vie Style, Inc.

 - Cross-platform desktop bluetooth LE application development using Flutter/Dart and C.
 - Development of machine learning models for in-ear EEG mood estimation
- April 2022 - Nov 2022

Postdoctoral Researcher

Kyoto, Japan

Kyoto Sangyo University

 - Development of a recommendation system for safe and enjoyable e-bike routes.
 - Real-time advertising system based on user trajectories and location.
 - Working with Flutter, React, Google Maps API, Azure Cognitive Service, Python and XGBoost.
- Sep 2020 - April 2022

Chief Technology Officer

Tokyo, Japan

Smart Care Tech Co., Ltd.

 - Design and development of a real-time human behavior analysis system.
 - In-house tooling for recording management and video event querying.
 - Development of web and Android applications for personalized medication.
 - Supervision and guidance of two junior software developers.
 - Work is performed with Linux, Python, Flask, Docker, Redis, PostgreSQL, PyTorch, Tensorflow, TensorRT and Kotlin for Android.
- Aug 2019 - Mar 2020

Research Intern in Affective Computing

Atsugi, Japan

NTT Communication Science Laboratories

 - Designing and conducting experiments with human participants.
 - Collecting and analyzing data with multimodal recording systems using sensors including eye tracking, electro-encephalography (Biosemi), electrooculography and electromyography (Shimmer Sensing).
 - Experiments were performed with a mix of custom C++ and Matlab, while analysis was done with Matlab and Python.
- Dez 2015 – Mar 2017

Software Engineer

Erlangen, Germany

Fraunhofer Institute for Integrated Circuit (IIS)

 - Implementation of the Advanced Audio Codec (AAC) for Bluetooth in Android smartphones.
 - Customer support in porting AAC to different embedded platforms (ARM, Xtensa, etc.)
 - Basic quality assurance through stress-testing of the in-house code base.
 - Work was done with Bash and C on linux machines. Additionally, productivity and automation tools like Jenkins and Jira were used.
- Aug 2014 - Mar 2015

Research Assistant in Sound Localisation

Oldenburg, Germany

Fraunhofer Institute for Digital Media Technology (IDMT)

 - Implementation of different state-of-the-art localisation algorithms.
 - Comparison of different localisation algorithms.
 - Design and implementation of a GUI for algorithm comparison.
 - All tasks were performed with Matlab.

Education

2017 - 2020 **Human Informatics (PhD)**
Tsukuba, Japan **School of Integrative and Global Majors. University of Tsukuba.**

2013 - 2015 **Hearing Technology and Audiology (MSc)**
Oldenburg, Germany **School of Medicine and Health Sciences. Department of Medical Physics and Acoustics. University of Oldenburg.**

2009 - 2013 **Hearing Technology and Audiology (BSc)**
Oldenburg, Germany **School of Construction, Geoinformation and Health Sciences. Department of Technology and Health. Jade University of Applied Sciences Oldenburg.**

Skills

Programming Languages Bash, C/C++, Dart, HTML/CSS/JS, Java, Kotlin, Matlab, Python, SQL.

Software tools Android, Azure Cognitive Services, Docker, Firebase, Flask, Flutter, Git, Google Maps API, Jenkins, Jira, Kafka, Oculus SDK, PyTorch, React, React-Native, Redis, Robot Operating System (ROS), Tensorflow, TensorRT, UX/UI design, Unity, XGBoost.

Soft skills Adaptability, Effective communication, Leadership, Problem-solving, Responsibility, Time management, Teamwork

Languages **German** (native) , **English** (working proficiency) , **Japanese** (JLPT N3) .

Grants

Research Grants

2019 **Challenge grant**, Project: El-Astrocade. University of Tsukuba. Tsukuba, Japan. 5 000 USD

Scholarships

2017 – 2020 **Special Fellows Scholarship**, University of Tsukuba. Tsukuba, Japan. 82 000 USD

Publications

Peer-reviewed Journals

- 2022 Yamaguchi R., Li D., Yoshihisa T., Siriaraya P., **Dollack F.**, Shimojo S., Kawai Y. "A Potential Comfort Navigation System Based on Facial Emotion Analysis During Bicycle Riding". Institute of Electronics, Information and Communication Engineers (IEICE) Transactions on Communications.
- 2019 **Dollack, F.**, Perusquía-Hernández, M., Kadone, H., Suzuki, K. "Gaze and head anticipation during locomotion with auditory instruction in the presence and absence of visual input". *Frontiers in Human Neuroscience* Vol. 13:293. doi: 10.3389/fnhum.2019.00293

Peer-reviewed conference proceedings

- 2023 Yamaguchi R., **Dollack F.**, Siriaraya P., Yoshihisa T., Shimojo S., Kawai Y., "Comfortable Maps Generation System based on Analysis of Cyclists' Facial Expressions using a Bike-mounted Smartphone". IEEE International Conference on Consumer Electronics (ICCE), Las Vegas, USA, January 2023, 6 pages.
- 2023 Konishi Y., **Dollack, F.**, Siriaraya P., Li D., Tanaka K., Kawai Y., Nakajima S., "Verification of the Influence of Multiple Virtual Runners on Rival Recommendation for Acoustic AR Running Assistance System". IEEE International Conference on Consumer Electronics (ICCE), Las Vegas, USA, January 2023, 6 pages.
- 2022 Yamaguchi F., **Dollack F.**, Ueda M., Nakajima S. "Feature Relevance Analysis of Product Reviews to Support Online Shopping". 24th International Conference on Information Integration and Web Intelligence (II-WAS2022), online, Italy, November 2022, 12 pages.
- 2022 **Dollack F.**, Ait Baali H., Cuberos Balda M., Gomanne L., Paez-Granados D., Perusquía-Hernández, M., Salazar J., D. "Augmenting interoceptive awareness with off-the-shelf sensors using visuo-haptic emotional stimulus". 9th Mexican International Conference on Human-Computer Interaction (MexIHC), Mexico, November 2022, 4 pages.
- 2021 Perusquía-Hernández, M., **Dollack, F.**, Tan, C. K., Namba, S., Ayabe-Kanamura, S., Suzuki, K. "Smile Action Unit detection from distal wearable Electromyography and Computer Vision". 16th IEEE International Conference on Automatic Face and Gesture Recognition. [FG2021]
- 2021 Gómez Jáuregui, D.A., **Dollack, F.**, Perusquía-Hernández, M. "Robot mirroring: Improving well-being by fostering empathy with an artificial agent representing the self". Functions of emotions for socially interactive agents workshop adjunct to the 9th Affective Computing and Intelligent Interaction Conference. Accepted.
- 2020 Perusquía-Hernández, M., Gómez Jáuregui, D. A., Cuberos-Balda, M., Paez-Granados, D. F., **Dollack, F.**, Salazar, J. V. "Robot Mirroring: Promoting Empathy with an Artificial Agent by Reflecting the User's Physiological Affective States". Proceedings of the 29th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN), Naples, Italy, September 2020, 6 pages.
- 2019 **Dollack, F.**, Perusquía-Hernández, M., Kadone, H., Suzuki, K. "Auditory Locomotion Guidance System For Spatial Localization". 2019 International Symposium on Micro-NanoMechatronics and Human Science (MHS), pp. 1-5.
- 2017 **Dollack, F.**, Imbery, C., Bitzer, J. "On the Analysis of Acoustic Distance Perception in a Head Mounted Display", Proceedings of the International Conference on Artificial Reality and Telexistence and Eurographics Symposium on Virtual Environments (ICAT-EGVE), Adelaide, Australia, November 2017, 4 pages. doi: 10.2312/egve.20171338

Publications without peer-review

- 2022 **Dollack, F.**, Yamaguchi, R., Siriaraya, P., Yoshihisa, T., Shimojo, S., Kawai, Y. "Detecting Changes in User Emotions During Bicycle Riding by Sampling Facial Images". Adjunct Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology. [UIST2022]
- 2021 Perusquía-Hernández, M., **Dollack, F.**, Tan, C.K., Namba, S., Ayabe-Kanamura, S., Suzuki, K. "Facial distal electromyography synergy analysis uncovers the relevance of the Duchenne marker in spontaneous smile production". Society of Affective Science conference. 2021. Oral presentation. [SAS2021a]
- 2020 Perusquía-Hernández, M., **Dollack, F.**, Tan, C. K., Namba, S., Ayabe-Kanamura, S., Suzuki, K. "Facial movement synergies and Action Unit detection from distal wearable Electromyography and Computer Vision". arXiv:2008.08791.

Conference presentations without proceedings

- 2019 **Dollack, F.**, Perusquía-Hernández, M., Kadone, H., Suzuki, K. "Auditory Locomotion Guidance System For Spatial Localization". Proceedings of International Symposium of Micro-NanoMechatronics and Human Science (MHS), pp. 49-52, Nagoya, Japan, December 2019.
- 2016 **Dollack, F.**, Imbery, C., van de Par, S., Bitzer, J. "Influence of visual stimulation on distance perception and externalisation". Proceedings of the DAGA 2016, pp. 669-672, Aachen, Germany, March 2016.
- 2013 Hansen, M., **Dollack, F.**, Raufer, S., Grahlman, H.-L., Eberlei, G. "Speech intelligibility in realistic listening situations for different numbers, azimuths and movement of speech or noise maskers". Proceedings of the AIA-DAGA 2013, including the 40th Italian (AIA) Annual Conference on Acoustics, pp. 425-427.
- 2021 Perusquía-Hernández, M., **Dollack, F.**, Tan, C.K., Namba, S., Ayabe-Kanamura, S., Suzuki, K. "Facial distal electromyography synergy analysis uncovers the relevance of the Duchenne marker in spontaneous smile production". Society of Affective Science conference. 2021. Oral presentation.

Posters

- 2021 Perusquía-Hernández, M., **Dollack, F.**, Ayabe-Kanamura, S., Suzuki, K. "Solitary and social smile production in congenital blindness". Society of Affective Science conference. 2021. Oral presentation.
- 2022 **Dollack, F.**, Yamaguchi, R., Siriaraya, P., Kawai, Y. "Detecting Changes in User Emotions During Bicycle Riding by Sampling Facial Images". The 35th Annual ACM Symposium on User Interface Software and Technology (UIST). 2022. doi: 10.1145/3526114.3558710
- 2022 **Dollack, F.**, Li, D., Yamaguchi, R., Yoshihisa, T., Shimojo, S., Kawai, Y. "Driver Experience Sampling in the Wild: A Memory-aware Sentiment Strength Extraction Method". The 3rd workshop on Momentary Emotion Elicitation and Capture (MEEC).
- 2019 **Dollack, F.**, Perusquía-Hernández, M., Kadone, H., Suzuki, K. "Effect of Voluntary Gaze Movement on Gait Steering Control". International Society of Posture and Gait Research (ISPGR) World Congress.
- 2019 **Dollack, F.**, Kadone, H., Perusquía-Hernández, M., Suzuki, K. "Head Anticipation during Auditory Instructed Locomotion". International Society of Posture and Gait Research (ISPGR) World Congress.

Theses

- 2020 **Dollack, F.**, "Behavioural understanding of human spatial perception and navigation in auditory space". Ph.D. Thesis. Supervised by: Suzuki, K.
- 2015 **Dollack, F.**, "Investigation on the human performance at identifying facing angle with respect to acoustic externalization and presentation of different complex visual stimuli". Master thesis. Supervised by: Bitzer, J. and van de Par, S.
- 2013 **Dollack, F.**, "Influence of the placing of a circular microphone array on the results of acoustic direction of arrival estimation". Bachelor thesis. Supervised by: Wallhoff, F. and Gerlach, S.