Stanford

Narayan Schutz

Postdoctoral Scholar, Psychiatry

Bio

BIO

Dr. Schuetz earned his PhD in Biomedical Engineering with highest honors (summa cum laude, best thesis, and perfect GPA) from the ARTORG Center for Biomedical Engineering Research at the University of Bern, Switzerland in collaboration with startup domo.health SA and Idiap/EPFL. He also holds MSc and BSc degrees in Computational and Molecular Life Sciences. Prior to moving to California, he worked as a data scientist at a digital health startup based at EPFL, Switzerland. His interdisciplinary research on human health sensing in the context of healthy aging has earned him numerous prestigious awards totaling over $37,000. He was also awarded a mobility fellowship from the Swiss National Science Foundation and Research Fellowship from the Wu Tsai Human Performance Alliance.

Motivation:

Having served as a medic in the Swiss Army and worked in elder care during his studies, Dr. Schuetz developed a strong conviction that maintaining functional independence and supporting healthy aging are amongst the most critical factors for a fulfilling and dignifying life at every age but particularly during later stages.

Research:

His research focuses on developing and validating novel AI technologies for active and passive remote health monitoring with the goal to enable the earlier detection of health risks (e.g. through digital biomarkers) and deliver digital interventions that extend human healthspan and enhance human performance. More specifically, he works on generative deep learning models to simulate large-scale human physiology and behavior using smartphone and wearable data, alongside developing novel computer vision approaches for artificially supervised functional physical assessment.

Expertise:

Beginning with a fascination for Theano and Geoffrey Hinton's course on neural networks around 2015, Dr. Schuetz has nearly a decade of experience developing and using AI/ML as well as digital signal processing methods for large-scale health and sensor data analytics. His technical contributions include numerous peer-reviewed articles and a patent in the field. Dr. Schuetz is also highly experienced in successfully working with multidisciplinary teams both academically and profesionally. Moreover, he brings several years of professional software engineering experience and led the development of a cross-platform telerehabilitation system successfully deployed in clinical environments.

Professional Experience:

2022 - 2023, Data Scientist, domo.health SA, Switzerland

2016 - 2021, Software Engineer (part-time), ARTORG Center for Biomedical Engineering Research, Switzerland

2014 - 2016, Nursing Assistant (part-time), Senevita AG, Switzerland

2011 - 2019, Medic, Swiss Armed Forces, Switzerland

HONORS AND AWARDS

- Human Performance Research Fellowship ($80,000+), Wu Tsai Human Performance Alliance (2025)
- Vontobel Award for Research on Age(ing) - $17,000, University of Zürich (2023)
- Postdoc.Mobility Fellowship ($140,000), Swiss National Science Foundation (2022)
- Preis für Alternsforschung - $11,000, Seniorenunverität Bern (2022)
- StrongAge Young Investigator Award - $5,000, StrongAge (2022)
- Best PhD Thesis in Biomedical Engineering - $1,000, Competence Center for Medical Technology (CCMT) & University of Bern (2022)
- Best Poster Award - $2,000, Alumni MedBern (2019)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Reviewer, European Respiratory Journal (2023 - present)
- Reviewer, IEEE Journal of Biomedical and Health Informatics (2021 - present)
- Associate Editor, JMIR Aging (2024 - present)
- Member, IEEE (2019 - present)

PROFESSIONAL EDUCATION

- PhD, summa cum laude, ARTORG Center for Biomedical Engineering Research, University of Bern, Bern, Switzerland , Biomedical Engineering (2022)

STANFORD ADVISORS

- Euan Ashley, Postdoctoral Research Mentor
- Ehsan Adeli, Postdoctoral Faculty Sponsor

PATENTS

- Narayan Schuetz, Angela Botros, Philipp Buluschek, Guillaume DuPasquier, Michael Single, Stephan Gerber, Tobias Nef. "United States Patent 20240248954 ASYNCHRONOUS INTERCORRELATED TIME SERIES DATASETS ALIGNMENT METHOD", DomoHealth SA

LINKS

- Personal Website: https://schuetz.su.domains/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

I work on using digital health technologies to detect and monitor aging relevant health indicators and outcomes using cutting-edge machine and deep learning approaches, with the goal to make our healthcare system more personalised and proactive.

Current research topics include remote gait and mobility assessments, learning health representations from large-scale smartphone data, and using novel ambient intelligence approaches to foster independent living in older adults.

LAB AFFILIATIONS

- Euan Ashley, Ashley Lab (11/22/2024)
- Ehsan Adeli, Stanford Translational AI Lab (11/1/2024)

Publications

PUBLICATIONS

- **Speaking the Language of Inclusion: Examining English Language Requirements in Cardiovascular Digital Health Trials.** *JACC. Advances*
  Schütz, N., Doijad, R., Eltahir, A. A., Sarraju, A., Rodriguez, F., Kim, D. S.
  2025; 4 (10 Pt 2): 102123

- **Unlocking insights: Clinical associations from the largest 6-minute walk test collection via the my Heart Counts Cardiovascular Health Study, a fully digital smartphone platform.** *Progress in cardiovascular diseases*
  Kim, D. S., Schuetz, N., Johnson, A., Tolas, A., Mantena, S., O'Sullivan, J. W., Hershman, S. G., Myers, J. N., Christle, J. W., Oppezzo, M., Linos, E., Rodriguez, F., Mattsson, et al
  2025

- **Safety, Feasibility, and Utility of Digital Mobile Six-Minute Walk Testing in Pulmonary Arterial Hypertension: The DynAMITE Study.** *medRxiv : the preprint server for health sciences*
  Schütz, N., Glinskii, V., Anderson, R., Del Rosario, P., Hedlin, H., Lee, J., Hess, J., Van Wormer, S., Lopez, A., Hershman, S. G., De Jesus Perez, V., Zamanian, R. T.
  2024

- **A systems approach towards remote health-monitoring in older adults: Introducing a zero-interaction digital exhaust.** *NPJ digital medicine*
  Schütz, N., Knobel, S. E., Botros, A., Single, M., Pais, B., Santschi, V., Gatica-Perez, D., Buluschek, P., Urwyler, P., Gerber, S. M., Müri, R. M., Mosimann, U. P., Saner, et al
  2022; 5 (1): 116

- **A Sensor-Driven Visit Detection System in Older Adults' Homes: Towards Digital Late-Life Depression Marker Extraction.** *IEEE journal of biomedical and health informatics*
  Schutz, N., Botros, A., Hassen, S. B., Saner, H., Buluschek, P., Urwyler, P., Pais, B., Santschi, V., Gatica-Perez, D., Muri, R. M., Nef, T.
  2022; 26 (4): 1560-1569

- **Contactless Sleep Monitoring for Early Detection of Health Deteriorations in Community-Dwelling Older Adults: Exploratory Study.** *JMIR mHealth and uHealth*
  Schütz, N., Saner, H., Botros, A., Pais, B., Santschi, V., Buluschek, P., Gatica-Perez, D., Urwyler, P., Müri, R. M., Nef, T.
  2021; 9 (6): e24666

- **Potential of Ambient Sensor Systems for Early Detection of Health Problems in Older Adults** *FRONTIERS IN CARDIOVASCULAR MEDICINE*
  Saner, H., Schutz, N., Botros, A., Urwyler, P., Buluschek, P., du Pasquier, G., Nef, T.
  2020; 7: 110

- **Long-Term Home-Monitoring Sensor Technology in Patients with Parkinson's Disease-Acceptance and Adherence** *SENSORS*
  Botros, A., Schutz, N., Camenzind, M., Urwyler, P., Bolliger, D., Vanbellingen, T., Kistler, R., Bohlhalter, S., Muri, R. M., Mosimann, U. P., Nef, T.
  2019; 19 (23)

- **Search and Match Task: Development of a Taskified Match-3 Puzzle Game to Assess and Practice Visual Search** *JMIR SERIOUS GAMES*
  Chesham, A., Gerber, S., Schutz, N., Saner, H., Gutbrod, K., Muri, R., Nef, T., Urwyler, P.
  2019; 7 (2): e13620

- **A framework of digital biomarkers for neurodegenerative diseases** *NATURE REVIEWS BIOENGINEERING*
  Nerrise, F., Schutz, N., Zhao, Q., Gould, C., Milstein, A., Schulman, K., Henderson, V. W., Landay, J., Fei-Fei, L., Lin, F., Adeli, E.
  2026

- **Assessing the feasibility of using smartphone data to identify risk of idiopathic pulmonary arterial hypertension.** *NPJ cardiovascular health*
  Delgado-SanMartin, J. A., Keles, M., Errington, N., Schuetz, N., Johnson, A., Gupta, V., Hershman, S., Toshner, M., Wilkins, M. R., Kiely, D. G., Thompson, R., Ashley, E., Wang, et al
  2026; 3 (1)

- **Fine-tuning LLMs in behavioral psychology for scalable health coaching.** *NPJ cardiovascular health*
  Mantena, S., Johnson, A., Oppezzo, M., Schütz, N., Tolas, A., Doijad, R., Mattson, C. M., Lawrie, A., Ramirez-Posada, M., Schmiedmayer, P., Linos, E., King, A. C., Rodriguez, et al
  2025; 2 (1): 48

- **Fine-tuning Large Language Models in Behavioral Psychology for Scalable Physical Activity Coaching.** *medRxiv : the preprint server for health sciences*
  Mantena, S., Johnson, A., Oppezzo, M., Schuetz, N., Tolas, A., Doijad, R., Mattson, C. M., Lawrie, A., Ramirez-Posada, M., Linos, E., King, A. C., Rodriguez, F., Kim, et al
  2025
- **Case report of early signs of aortic stenosis decompensation detected via ambient sensor-derived digital biomarkers** *EUROPEAN HEART JOURNAL-CASE REPORTS*
  Arenja, N., Schutz, N., Buluschek, P., Nef, T., Saner, H.
  2025; 9 (2): ytae655
- **Evaluation of a New Mobile Virtual Reality Setup to Alter Pain Perception: Pilot Development and Usability Study in Healthy Participants.** *JMIR serious games*
  Knobel, S. E., Oberson, R., Raber, J., Schutz, N., Egloff, N., Botros, A., Gerber, S. M., Nef, T., Heydrich, L.
  2024; 12: e52340
- **Sleep characteristics and self-reported sleep quality in the oldest-old: Results from a prospective longitudinal cohort study** *JOURNAL OF SLEEP RESEARCH*
  Saner, H., Mori, K., Schutz, N., Buluschek, P., Nef, T.
  2024: e14348
- **Evaluation of Ambient Sensor Systems for the Early Detection of Heart Failure Decompensation in Older Patients Living at Home Alone: Protocol for a Prospective Cohort Study.** *JMIR research protocols*
  Vogeli, B., Arenja, N., Schutz, N., Nef, T., Buluschek, P., Saner, H.
  2024; 13: e55953
- **Development of an Open-source and Lightweight Sensor Recording Software System for Conducting Biomedical Research: Technical Report** *JMIR FORMATIVE RESEARCH*
  Single, M., Bruhin, L. C., Schuetz, N., Naef, A. C., Hegi, H., Reuse, P., Schindler, K. A., Krack, P., Wiest, R., Chan, A., Nef, T., Gerber, S. M.
  2023; 7: e43092
- **Eigenbehaviour as an Indicator of Cognitive Abilities.** *Sensors (Basel, Switzerland)*
  Botros, A. A., Schuetz, N., Röcke, C., Weibel, R., Martin, M., Müri, R. M., Nef, T.
  2022; 22 (7)
- **An Instrumented Apartment to Monitor Human Behavior: A Pilot Case Study in the NeuroTec Loft** *SENSORS*
  Gerber, S. M., Single, M., Knobel, S. E. J., Schutz, N., Bruhin, L. C., Botros, A., Naef, A. C., Schindler, K. A., Nef, T.
  2022; 22 (4)
- **Contactless Gait Assessment in Home-like Environments** *SENSORS*
  Botros, A., Gyger, N., Schutz, N., Single, M., Nef, T., Gerber, S. M.
  2021; 21 (18)
- **Case Report: Ambient Sensor Signals as Digital Biomarkers for Early Signs of Heart Failure Decompensation** *FRONTIERS IN CARDIOVASCULAR MEDICINE*
  Saner, H., Schuetz, N., Buluschek, P., Du Pasquier, G., Ribaudo, G., Urwyler, P., Nef, T.
  2021; 8: 617682
- **Wearable Based Calibration of Contactless In-home Motion Sensors for Physical Activity Monitoring in Community-Dwelling Older Adults** *FRONTIERS IN DIGITAL HEALTH*
  Schutz, N., Saner, H., Botros, A., Buluschek, P., Urwyler, P., Muri, R. M., Nef, T.
  2021; 2: 566595
- **Trainable Spectrally Initializable Matrix Transformations in Convolutional Neural Networks**
  Alberti, M., Botros, A., Schuetz, N., Ingold, R., Liwicki, M., Seuret, M., IEEE COMP SOC
  IEEE COMPUTER SOC.2021: 8204-8211
- **Contact-free sensor signals as a new digital biomarker for cardiovascular disease: chances and challenges** *EUROPEAN HEART JOURNAL - DIGITAL HEALTH*
  Saner, H., Knobel, S., Schuetz, N., Nef, T.
  2020; 1 (1): 30-39

- **Evaluation of 1-Year in-Home Monitoring Technology by Home-Dwelling Older Adults, Family Caregivers, and Nurses** *FRONTIERS IN PUBLIC HEALTH*
  Pais, B., Buluschek, P., DuPasquier, G., Nef, T., Schuetz, N., Saner, H., Gatica-Perez, D., Santschi, V.
  2020; 8: 518957

- **Real-World Consumer-Grade Sensor Signal Alignment Procedure Applied to High-Noise ECG to BCG Signal Synchronization.** *Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual International Conference*
  Schutz, N., Botros, A. A., Knobel, S. E., Saner, H., Buluschek, P., Nef, T.
  2020; 2020: 5858-5962

- **Development and Evaluation of Maze-Like Puzzle Games to Assess Cognitive and Motor Function in Aging and Neurodegenerative Diseases.** *Frontiers in aging neuroscience*
  Nef, T., Chesham, A., Schütz, N., Botros, A. A., Vanbellingen, T., Burgunder, J. M., Müllner, J., Martin Müri, R., Urwyler, P.
  2020; 12: 87

- **Real-World Consumer-Grade Sensor Signal Alignment Procedure Applied to High-Noise ECG to BCG Signal Synchronization**
  Schuetz, N., Botros, A. A., Knobel, S. E. J., Saner, H., Buluschek, P., Nef, T., IEEE
  IEEE.2020: 5958-5962

- **Isometric Strength Measures are Superior to the Timed Up and Go Test for Fall Prediction in Older Adults: Results from a Prospective Cohort Study** *CLINICAL INTERVENTIONS IN AGING*
  Valenzuela, P. L., Maffiuletti, N. A., Saner, H., Schutz, N., Rudin, B., Nef, T., Urwyler, P.
  2020; 15: 2001-2008

- **A Simple Two-Dimensional Location Embedding for Passive Infrared Motion-Sensing based Home Monitoring Applications**
  Botros, A. A., Schuetz, N., Saner, H., Buluschek, P., Nef, T., IEEE
  IEEE.2020: 5826-5830

- **A comparative study of pattern recognition algorithms for predicting the inpatient mortality risk using routine laboratory measurements** *ARTIFICIAL INTELLIGENCE REVIEW*
  Schutz, N., Leichtle, A. B., Riesen, K.
  2019; 52 (4): 2559-2573

- **De nouvelles technologies au service du maintien a domicile des personnes agees.** *Revue medicale suisse*
  Pais, B., Buluschek, P., Nef, T., Schutz, N., Saner, H., Gatica, D., Santschi, V.
  2019; 15 (658): 1407-1411

- **Validity of pervasive computing based continuous physical activity assessment in community-dwelling old and oldest-old.** *Scientific reports*
  Schütz, N., Saner, H., Rudin, B., Botros, A., Pais, B., Santschi, V., Buluschek, P., Gatica-Perez, D., Urwyler, P., Marchal-Crespo, L., Müri, R. M., Nef, T.
  2019; 9 (1): 9662

- **Therapist-Guided Tablet-Based Telerehabilitation for Patients With Aphasia: Proof-of-Concept and Usability Study.** *JMIR rehabilitation and assistive technologies*
  Gerber, S. M., Schutz, N., Uslu, A. S., Schmidt, N., Rothlisberger, C., Wyss, P., Perny, S., Wyss, C., Koenig-Bruhin, M., Urwyler, P., Nyffeler, T., Marchal-Crespo, L., Mosimann, et al
  2019; 6 (1): e13163

- **Accuracy and Calibration of Computational Approaches for Inpatient Mortality Predictive Modeling** *PLOS ONE*
  Nakas, C. T., Schutz, N., Werners, M., Leichtle, A. B.
  2016; 11 (7): e0159046