**SCIENCE BEHIND PROPRIETARY METHOD**

**Machine learning analysis of pregnancy data enables early identification of a subpopulation of newborns with ASD**

Hugues Caly, Hamed Rabiei, Perrine Coste-Mazeau, Sebastien Hantz, Sophie Alain, Jean-Luc Eyraud, Thierry Chianea, Catherine Caly, David Makowski, Nouchine Hadjikhani, Eric Lemonnier, Yehezkel Ben-Ari

Abstract: to identify newborns at risk of developing ASD and to detect ASD biomarkers early after birth, we compared retrospectively ultrasound and biological measurements of babies diagnosed later with ASD or neurotypical (NT). We used a supervised machine learning algorithm with a cross-validation technique to classify NT and ASD babies and performed various statistical tests.

<https://pubmed.ncbi.nlm.nih.gov/33767300/>

# Identifying early pulmonary arterial hypertension biomarkers in systemic sclerosis: machine learning on proteomics from the DETECT cohort

Yasmina Bauer, Simon de Bernard, Peter Hickey, Karri Ballard, Jeremy Cruz, Peter Cornelisse, Harbajan Chadha-Boreham, Oliver Distler, Daniel Rosenberg, Martin Doelberg, Sebastien Roux, Oliver Nayler, Allan Lawrie

Abstract: the main objective of this study was to identify a proteomic biomarker signature that could discriminate SSc patients with and without PAH using a machine learning approach and to validate the findings in an external cohort.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8276065/>

# Applied Machine Learning Method to Predict Children With ADHD Using Prefrontal Cortex Activity: A Multicenter Study in Japan

Akira Yasumura, Mikimasa Omori, Ayako Fukuda, Junichi Takahashi, Yukiko Yasumura, Eiji Nakagawa, Toshihide Koike, Yushiro Yamashita, Tasuku Miyajima, Tatsuya Koeda, Masao Aihara, Hisateru Tachimori, Masumi Inagaki

Abstract: machine learning was used to predict disorder severity from new brain function data, using a support vector machine (SVM). A multicenter approach was used to collect data for machine learning training, including behavioral and physiological indicators, age, and reverse Stroop task (RST) data from 108 children with ADHD and 108 typically developing (TD) children.

<https://journals.sagepub.com/doi/10.1177/1087054717740632>

# Präzisionspsychiatrie und der Beitrag von Brain Imaging und anderen Biomarkern

David Popovic, Kolja Schiltz, Peter Falkai, Nikolaos Koutsouleris

Abstract: modern machine learning methods make it possible to integrate high-dimensional and multimodal data sets and generate models which provide new psychobiological insights and offer the possibility of individualized, biomarker-driven single-subject prediction of diagnosis, therapy response and prognosis.

<https://www.thieme-connect.de/products/ejournals/abstract/10.1055/a-1300-2162>

# Advanced machine learning for predicting individual risk of flares in rheumatoid arthritis patients tapering biologic drugs

Asmir Vodencarevic, Koray Tascilar, Fabian Hartmann, Michaela Reiser, Axel J Hueber, Judith Haschka, Sara Bayat, Timo Meinderink, Johannes Knitza, Larissa Mendez, Melanie Hagen, Gerhard Krönke, Jürgen Rech, Bernhard Manger, Arnd Kleyer, Marcus Zimmermann-Rittereiser, Georg Schett, David Simon, RETRO study group

Abstract: longitudinal clinical data of RA patients on bDMARDs from a randomized controlled trial of treatment withdrawal (RETRO) were used to build a predictive model to estimate the probability of a flare. Machine learning methods were deemed feasible to predict flares after tapering bDMARDs in RA patients in sustained remission.

<https://arthritis-research.biomedcentral.com/articles/10.1186/s13075-021-02439-5>

# Machine learning application for the prediction of SARS-CoV-2 infection using blood tests and chest radiograph

Richard Du, Efstratios D Tsougenis, Joshua W K Ho, Joyce K Y Chan, Keith W H Chiu, Benjamin X H Fang, Ming Yen Ng, Siu-Ting Leung, Christine S Y Lo, Ho-Yuen F Wong, Hiu-Yin S Lam, Long-Fung J Chiu, Tiffany Y So, Ka Tak Wong, Yiu Chung I Wong, Kevin Yu, Yiu-Cheong Yeung, Thomas Chik, Joanna W K Pang, Abraham Ka-Chung Wai, Michael D Kuo, Tina P W Lam, Pek-Lan Khong, Ngai-Tseung Cheung, Varut Vardhanabhuti

Abstract: triaging and prioritizing patients for RT-PCR test had been essential in the management of COVID-19 in resource-scarce countries. In this study, we applied machine learning (ML) to the task of detection of SARS-CoV-2 infection using basic laboratory markers.

<https://www.nature.com/articles/s41598-021-93719-2>

# Intravascular ultrasound-based deep learning for plaque characterization in coronary artery disease

Hyungjoo Cho, Soo-Jin Kang, Hyun-Seok Min, June-Goo Lee, Won-Jang Kim, Se Hun Kang, Do-Yoon Kang, Pil Hyung Lee, Jung-Min Ahn, Duk-Woo Park, Seung-Whan Lee, Young-Hak Kim, Cheol Whan Lee, Seong-Wook Park, Seung-Jung Park

Abstract: the aim was to develop IVUS-based algorithms for classifying attenuation and calcified plaques. Our deep learning algorithms for plaque characterization may assist clinicians in recognizing high-risk coronary lesions.

<https://pubmed.ncbi.nlm.nih.gov/33831671/>

# Deep Learning in Opthalmology: Iris Melanocytic Tumors Intelligent Diagnosis

Abdulkader Helwan

Abstract: in this research, we investigate the effects of transfer learning based convolutional neural networks for the iris tumor malignancy identification as it is notoriously hard to distinguish an iris nevus from an iris tumor.

<https://www.medrxiv.org/content/10.1101/2021.09.14.21263573v1>

# Predicting bloodstream infection outcome using machine learning

# Yazeed Zoabi, Orli Kehat, Dan Lahav, Ahuva Weiss-Meilik, Amos Adler, Noam Shomron

# Abstract: we developed electronic medical record-based machine learning models that predict patient outcomes of BSI. Our models were trained, using electronic medical records that include demographics, blood tests, and the medical and diagnosis history of 7,889 hospitalized patients diagnosed with BSI.

# <https://www.medrxiv.org/content/10.1101/2021.05.18.21257369v1>

# Deep learning and machine learning for EEG signal processing on the example of recognizing the disease of alcoholism

# Rakhmatulin Ildar

# Abstract: the manuscript demonstrates that the deep neural network which operates only with a dataset of EEG correlation signals can anonymously classify the alcoholic and control groups with high accuracy.

# <https://www.medrxiv.org/content/10.1101/2021.06.02.21258251v1>

# COVID-19 Chest X-Ray Image Classification Using Deep Learning

# Gunther Correia Bacellar, Mallikarjuna Chandrappa, Rajlakshman Kulkarni, Soumava Dey

# Abstract: artificial intelligence techniques powered by deep learning algorithms, which learn from radiography images and predict presence of COVID-19 have potential to enhance current diagnosis process.

# <https://www.medrxiv.org/content/10.1101/2021.07.15.21260605v1>