Project name: **IRENA** (**I**nvariant **R**epresentations **E**xtraction in **N**eural **A**rchitectures)
Team: **NeuroTHIx (Du Xiaorui, Erdem Yavuzhan, Cristian Axenie)**

***Team contribution and motivation***

With an interesting mixture of science and practical programming skills, team NeuroTHIx accepted the challenge to design and develop a neurally-inspired model and system capable of extracting invariant representation in a visual scene using unsupervised learning, biologically inspired computation principles and an efficient implementation. We believe that, an alternative approach to deep learning in learning invariant representations is to root the computation model and the processing steps in neuro-biological principles of computations, such as competition, cooperation and learning. Driven by such a perspective we implemented already an initial version of the system and plan to extend it in the (possible) internship and research within Merck's AI Research Department. With a proactive, can-do attitude we believe that the current proof-of-concept system can be scaled and extended towards a practical and unified framework for learning invariant representations and computation in a single computationally efficient substrate.

***Team Intro***

**Mr. Du Xiaorui** is a Master in Technical University of Ingolstadt (THI). With a highly applied AI and ML background Mr. Du has successfully completed several industry internships among which some had strong impact on this research vision. Between 2017 and 2018, he was an Algorithms Engineer of the Guangzhou Metro Department in China, where he was responsible for the development of the heading detection system. Between 2018 to 2019, he was an intern with the Intelligent Driving Department in Guangzhou Automobile Group co.,Ltd (GAC), where he was responsible for the development of an object detection system based on an RGB camera for smart cars. Mr. Du is an experienced programmer and a national laureate of the Mathematical Modelling Competition. He has more than 4-year experience in C++, C, Python and 3-year experience in Deep Learning and Machine Learning. Moreover, he is familiar with current mainstream deep neural networks libraries.

**Mr. Yavuzhan Erdem** started his BA in Mechatronic Engineering at Marmara University, in 2014. At the time, Mr. Erdem is an international exchange student at Technical University of Ingolstadt (THI). Previously, Mr. Erdem has been selected as student representative of Technology Faculty. At the same time, have been selected as vice president of Mechatronic Engineering Student club and leads a robotics development team. In his professional career, Mr. Erdem has successfully completed several industry internships and participated in various student competitions on Autonomous Electric Cars and Artificial Intelligence.

**Mr. Cristian Axenie** earned a PhD in Neuroscience and Robotics from TU Munich in 2016 and spent one more year with the TUM Center of Competence Neuroengineering before joining Huawei Research Center in Munich. Since 2017 Dr. Axenie is a Senior AI and ML Research Engineer with Huawei's largest research center outside China. At the same time, Dr. Axenie leads the Audi Konfuzius-Institut Ingolstadt Lab, a Sino-German research initiative focused on combining modern AI and VR technology for applications ranging from sports technology to medical rehabilitation. Each term, Dr. Axenie teaches AI and ML for undergrads at Technical University of Ingolstadt (THI) where he spotted the two talented students now forming the NeuroTHIx team.