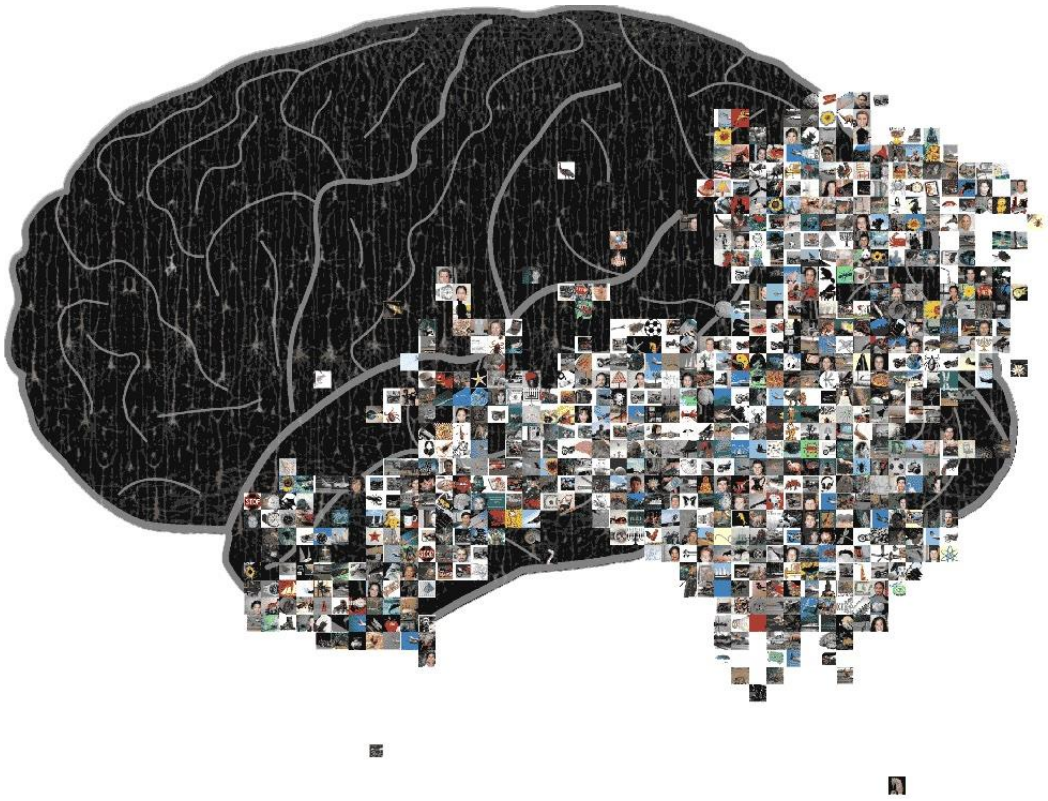

Our complex world and how to recognize objects in it

By Maria Diamantaki

"Once upon a time, there was a little boy, Saad, who was born and raised in Pakistan and had an innate tendency of helping everybody, anytime! He was passionate about vision and wanted to help blind people.

Soon after his studies in Electrical Engineering he moved to USA to work in a famous artificial intelligence company. His job was to build a simple assistive device for blind people to help them identify products in a supermarket. People would take photos of the products on the shelves and the device would tell them what the product was. After few months of work, a test device was ready so Saad went out to try it. His excitement soon faded away. The device was confusing red apples with cherries, or even muffins with chihuahuas! How difficult can it be to tell apart so distinct objects?! After studying in depth some well-known artificial vision algorithms, he realized that these algorithms were inspired by the visual system of the brain. So, to build a more accurate device he needed to understand brain computations.

His next journey is to pursue a PhD in Neuroscience studying visual perception and object recognition, with the hope one day to build to build a new, more accurate device".

Identifying objects in our complex environments is a task that our brain is challenged with multiple times daily. How our brain performs such computations routinely and in fractions of a second still remains a mystery.

Maria Diamantaki did her PhD in the Werner Reichardt Centre for Integrative Neuroscience at the University of Tübingen in Germany studying the structure-function relationships and plasticity of hippocampal neurons (the so called “brain’s GPS”) during spatial navigation.

Maria is currently a post-doctoral fellow in the Systems Neuroscience Lab at FORTH-IMBB, led by Manolis Froudarakis. Her research is funded by the European Commision under a Marie Skłodowska-Curie Individual fellowship action and is focused on deciphering how large populations of neurons in various regions of the brain communicate with each other in order to achieve object recognition in different contexts. She is using behavioural training with advanced functional brain recordings and computational modeling.