Raia Hadsell

- **Dr. Hadsell is a senior research scientist and Director of Robotics at DeepMind**
- **Research focus is on robotics, transfer learning, continual learning, deep reinforcement learning**

Photo from: https://wimlworkshop.org/sh_team/raia-hadsell-phd/

Overcoming catastrophic forgetting in neural network

- Developed the EWC algorithm to mitigate catastrophic forgetting in continual learning
- EWC protects the important weights from previous tasks when training on a new task
- Incorporates a penalty in the loss function so that the important weights from Task A do not change drastically when learning task B
- Link to paper: https://www.pnas.org/content/pnas/114/13/3521.full.pdf

Progress & Compress: A scalable framework for continual learning

- 2 phase learning process to utilize positive transfer + mitigate catastrophic forgetting
- Compress phase
  - Contains the "knowledge base": after each new task is learned, the policy is distilled into this base
  - Base contains knowledge from all previously learned tasks
- Progress phase:
  - Contains the "active column": this is where the new task is being learned
- http://proceedings.mlr.press/v80/schwarz18a/schwarz18a.pdf

Interested in learning more about Raia Hadsell? Check out some of her interviews!

MIT Robotics Today Talk on Scalable Robot Learning:

https://www.youtube.com/watch?v=e6BOQx1PD0c

Brain Inspired Podcast:

https://www.youtube.com/watch?v=j9qZeX9NUw8