Branding statement worksheet

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“I am the machine learning for medicine person.” (what’s a concise phrase for what you do?)

What is the general problem you are solving?

Should be understandable to anybody in computer science. Aim for one sentence.

Make computers and machines intelligent and use that intelligence to solve medical problems.

What specific problem does your research address?

Why is this problem important? Should help identify what area your research fits into.

I develop algorithms that analyse and visualise brain imaging data. This is important because the human brian is one of the final frontiers in science, and understanding the human brain will for example solve many brain diseases. Due to the complex nature of medical data which is 3D, limited, noisy and often unlabelled, I am also working on statistical theory in order to create the right set of tools to work with this data.

What have you achieved in this area?

Aim for one project, whichever is most impressive. Include two if they complement each other. (You can talk about more in a research statement.)

I’ve organised and ran TADPOLE, an international challenge where 33 teams created algorithms to predict the progression of Alzheimer’s disease. This is an important problem, as there are currently no treatments for Alzheimer’s disease that can stop or at least slow down cognitive decline, and we believe these algorithms will be able to select the right subjects for Alzheimer’s clinical trials in order to get treatment. TADPOLE was also unique as it was one of the only challenges in medical imaging to evaluate algorithms prospectively. I evaluated all 92 algorithm submissions, and helped identify the most important types of

algorithms and input features that help predict Alzheimer’s disease.

What is your research vision?

Should answer what you can do in five years. Aim high, as long as you can back up why you would succeed. Try to be memorable.

My immediate aim is to develop new theories for machine learning that will enable computer vision algorithms to work well on the challenging medical imaging datasets. My long-term aim is to place current medical imaging algorithms, which are currently working on supervised and unsupervised tasks, in the more natural reinforcement learning setting. This will enable machines, surgical robots and IoT devices to consider the environment around them and take suitable actions (i.e. acquire new image, deliver treatment, communicate with patient, perform surgery, search the internet for more information). This will create an entire ecosystem where devices (MRI scanner, surgical robot, patient’s mobile phone, etc …) gather data, take the right actions, and communicate with doctors and with each other to solve diseases and medical problems as efficient as possible.