

Date of submission:
Project title: Computer assisted
therapy and fMRI in aphasia

1



SINAPSE PhD Project Proposal Template for PhDs with Industry starting in 2010

PROJECT

Title:

Computer assisted therapy and fMRI in aphasia

Planned start date (month/year):

October 2010

SINAPSE Centre (i.e. primary university to which this studentship will be attached):

University of Edinburgh

University first supervisor: contact details

Name: Dr Cyril Pernet
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Second academic supervisor/ other university or other people in primary university involved with project

Name: Prof. Pascal Belin
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Industry

Propeller Multimedia Limited

Industry main contact details

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Department: Managing Director
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Key Other Industry people involved with Project including Industry Supervisor (if different to Industry main contact above)

Likely background of suitable student (eg. Neuroscience, MR Physics, Chemistry, Engineering, Informatics, Psychology) and essential skills required prior to starting this PhD:

suitable background: Neuropsychology or Speech therapy
– work experience with patient desirable

essential skills: knowledge in cognitive neuroscience of language

desirable skills: statistical analysis

Summary of proposed project (approximately 200 words):

Although it has been shown that intensive speech therapy improves long term outcomes in aphasic stroke patients, little is known neither about the brain mechanisms underlying long term recovery/improvement nor about which therapy has to be used. This projects aims at investigating the long term mechanisms underlying recovery/improvement in stroke using computer assisted home therapy. This project involves interacting between the academic team working on patient imaging and recovery and an industrial partner specialized in computer assisted therapy.

During the period of the PhD, the successful candidate will compare patients receiving or not additional speech therapy. The successful candidate will i) investigate the behavioural and neural correlates of home speech therapy using functional magnetic resonance imaging, ii) enquire the neural substrate underlying learning vs. cortical plasticity (control participants vs. patients), and iii) establish long term benefits of computer assisted home speech therapy.

Key references (up to five):

1. Pedersen, PM, Jorgensen, HS, Nakayama, H, Raaschou, HO, Olsen, TS (1995). Aphasia in acute stroke: incidence, determinants, and recovery. *Ann Neurol*, 38, 659-666.
2. Bhogal, SK, Teasell, R, Speechley, M. (2003). Intensity of aphasia therapy: impact on recovery. *Stroke*, 34, 987-993
3. Meinzer, M, Djundja, D, Barthel, G, Elbert, T, Rockstroch, B (2008) Long-term stability of improved language functions in chronic aphasia after constraint-induced aphasia therapy. *Stroke*, 36, 1462-1466
4. Alexander, MP (1989). Stroke rehabilitation outcome. A potential use of predictive variables to establish levels of care. *Stroke*, 25, 128-134.
5. Saur, D, Lange, R, Baumgartner, A, Schraknepper, V, Willmes, K, Rijntjes, M, Weiller, C (2006) Dynamics of language reorganization after stroke. *Brain*, 129, 1371-1384