

**Project Title:** Novel Computer Architecture Based on Processor-Memory Cell  
**Project No.:** RG 011-09ICT  
**Principal Investigator:** Dr. Ng Liang Shing  
**Co-researcher (s):**  
**Project Duration:** 1 April 2009 – 31 March 2010  
**Amount Granted:** RM 39, 000.00

**Abstract:**

This project started with the aim to create a simulation system for a “processor-memory cell” architecture. Budget limitation and lack of qualified RA were the main challenges for this project. Based on the approved budget of RM 39,000 of which RM 24,000 was allocated for salaries for research personnel for 1 year, I had to hire Research Assistants on a “part time” basis (RM 10 per hour). 4 RA had worked for this project over different period of time. Two papers have been written: (1) BUILDING EXPERT SYSTEM WITH NATURAL LANGUAGE KNOWLEDGEBASE (submitted to Malaysian Journal of Computer Science, ISI indexed), (2) A method for estimating Gap-Junctional conductance between CA3 Hippocampal Pyramidal Neurons (published in the Journal Integrated Neuroscience, Vol. 9, No. 1 (2010), ISI indexed.) (1) described an Expert System developed with this grant, that is capable of translating natural language into ES rules, which can in turn be used for simulation for the proposed “processor-memory cell” (PMC) architecture. (2) concerns a model of brain cell which can be adapted for the proposed PMC architecture. As such, we have achieved our project objectives, given the budget and human resource limitation, compared to the world class Top 500 Supercomputers research ([www.top500.org](http://www.top500.org)).