Arduino: A New Way To Model Hydrocephalus

What is Hydrocephalus
• Too much fluid on the brain
• Affects mostly infants
• Main treatment is a shunt system
• Flow related to shunt failure (Harris and Mcallister. 2012)

Technical Objectives
• Manipulate flow rate and system pressure of artificial Cerebral Spinal Fluid (CSF)
• Map system pressures to compare with physiologic data

Project Significance
• Sensitivity of brain tissue
• Dynamic environment of brain
• Other diseases
• Similarities in other organ systems

About the author
• Diagnosed with hydrocephalus at 18 months
• Have had 25 neurosurgeries
• Last surgery: Winter Semester 2017
• Began research with Dr. Harris in 2016

The concept

Future Work
• Real time patient modeling
• Checkpoint /restart
• Capable of processing 15 different samples
• User Friendly

Related Works
• Other servo models: (Marmarou, 1973)
• Work on CSF Production, make-up, and dynamics (Bottan, 2013)
• Computer Models: (Rekate et al, 1988)

References
40PC Series. (1982), 91929
Harris, C. A., Mcallister, J. P., 70, 12, 1589-1602

Partners
• Children’s Hospital of Michigan

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