

Diabetes, Hypertension and Metabolic Syndrome

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Exterior artificial pancreas project

Objective: Pump size exterior artificial pancreas that will keep the glucose between 120 – 150 mg/dl.

Method: The whole project based in idea that we should already know one insulin unit how much is able to go down the glucose and one glucagons unit how much is able to increase the glucose. Less than 120 mg/dl it uses glucagons. More than 150 mg/dl it uses insulin. The pump checks the glucose automatically every 8 minutes. The pump (which is software decision) will choose between insulin or glucagons base in internal database table with prerequisite glucose values and the insulin or glucagons units requiring for the each glucose value (adaptive database table for each diabetic). The pump (the software) is able to choose how many insulin or glucagons units it should use (that is not base on what the diabetic will eat, but base on the current glucose level that received from the sensor which is located in human body, needle and sensor are one piece). The insulin should have work duration 8 minutes and works instantly.

Result: I chose 120 mg/dl as the lowest allowance glucose level because this glucose level is secure for the diabetic (there is a time to prevent big hypoglycaemia).

Conclusion: This project offer to diabetics insulin injections freedom, hypoglycaemia prevention, run emergency tests, ideally for all ages, endocrinologists will have the software to adapt the internal database table of the pump for each diabetic needs.



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Biography

Christos Beretas is graduated from technical Vocation Lycee in Greece both A and B Cycle, 2000 - 2001. Is a holder of BSc degree from City University of Seattle, USA in Computer Systems with emphasis in Networking and Telecommunications, 2005 - 2008. Also, Christos is a holder of MSc degree from City University of Seattle, USA with major Computer Systems and emphasis: Technology Management, 2010 - 2012.

Christos also, holds a Diploma from Cleveland Institute of Electronics, USA in Computer Programming, 2009. In his academic career, he was several times on dean's list, and is a member of Alpha Beta Kappa honor society, Alpha of Ohio, USA. Currently he is a holder of Ph.D degree in Cyber Security from Innovative Knowledge Institute (Paris Graduate School), Paris, France.

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