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Google Scholar: **Ummu K. Jamaludin**

(scholar.google.co.nz/citations?user=lyNT6A4AAAAJ&hl=en)

Academic Qualification

- Feb 2009 – June 2013:** PhD in Mechanical Engineering, University of Canterbury, Christchurch, New Zealand
- Jan 2005 – Dec 2008:** Bachelor of Engineering (Hons) in Mechanical Engineering, University of Canterbury, Christchurch, New Zealand
- July 2003 – Dec 2004:** Australia Matriculation, International Education Centre (INTEC), UiTM, Shah Alam, Selangor, Malaysia

Working Experiences / Appointment

- Aug 2013 – up to date** Senior Lecturer in Faculty of Mechanical Engineering, Universiti Malaysia Pahang, Malaysia
- Feb 2009 – Dec 2012:** Tutor in Department of Mathematics and Statistics, University of Canterbury, Christchurch, New Zealand
- Feb 2007 – Dec 2008:** Note – taker for Disability Support Centre and Supervisor for tests and Examinations, University of Canterbury, Christchurch, New Zealand

Expert Area

Control systems; System modelling and dynamics; Instrumentation for Biomedical engineering; Physiological modelling; Parameter identification; Computational programming and algorithms especially in C, Scilab, MATLAB, R.

Research Interest

Biomedical system modelling; Metabolic and diabetes system modelling and control; Incretin effects and Kidney modelling and clinical protocol development; Intensive care and acute care medicine; System identification; Sensors and sensor design

Professional Qualification / Membership / Affiliation / Experience

1. Member of Institute of Electrical and Electronics Engineers, (IEEE)
2. Member of Board of Engineers Malaysia (BEM)

Postgraduate Supervision

1. Nurul Suraya Bt Azahari. *Development of an Archimedes Screw Runner Blade for Micro Hydro Power.* (On-Going). Main Supervisor
2. Che Zafirah Bt Rosly. *Development of Blood Glucose Control Algorithm in Malaysian Critically Ill Patients.* (On-Going). Main Supervisor
3. Khalijah Bt Khalid. *Developing a PID Controller for Blood Glucose Monitoring System in ICU.I* (On-Going). Main Supervisor
4. Mohammad Luqman B Humaidi. *Stochastic Modelling of Incretin Effects in Glucose-Insulin Control System for Critically Ill Patients.* (On-Going). Main Supervisor
5. Wan Zuhiraihan Binti Wan Md Zulkifly, *Developing a PID Controller for Incretin Mechanism in Glucose – Insulin Control System for Critical Care.* (On-Going). Main Supervisor
6. Qurratu'aini Aishah Binti Ahmad Fazil, *Investigation of the Kinetics of Blood Glucose and Cholesterol Levels in Diabetic and Non-Diabetic.*(On-Going). Main Supervisor
7. Thiwaan Rao A/L Narasimma Naidu. *Flow and Heat Transfer Characteristics of Supercritical Carbon Dioxide in Mini-Channels.* (Completed). Co-Supervisor

List of Publications

1. Ummu K. Jamaludin, Paul D. Docherty, J. Geoffrey Chase, Geoffrey M. Shaw, Impact of Haemodialysis on Insulin Kinetics of Acute Kidney Injury Patients in Critical Care, 2015, Journal of Medical and Biological Engineering, Volume 35, Issue 1, pp 125-133.
2. Ummu K. Jamaludin, Paul D. Docherty, J. Geoffrey Chase, Aaron Le Compte, Geoffrey M. Shaw, Thomas Desaive, Jean-Charles Preiser, Observation of incretin effects during enteral feed transitions of critically ill patients, e-SPEN Journal, Volume 7, Issue 4, August 2012, Pages e154-e159, ISSN 2212-8263
3. Lin, J., Jamaludin, U., Docherty, P., Razak, N. N., Le Compte, A., Pretty, C. G., Hann, C. E., Shaw, G. M. & Chase, J. G. (2010, September). Modeled insulin sensitivity and interstitial insulin action from a pilot study of dynamic insulin sensitivity tests. In *Control 2010, UKACC International Conference on* (pp. 1-6). IET.
4. Razak, N. N., Lin, J., Chase, J. G., Shaw, G. M., Pretty, C. G., Le Compte, A., Suhaimi, F. M. & Jamaludin, U. (2010, September). Glargine as a basal insulin supplement in recovering critically ill patients—An in silico study. In *Control 2010, UKACC International Conference on* (pp. 1-6). IET.
5. Jamaludin, U.K., Docherty, P.D., Chase, J.G., Le Compte, A.J., Shaw, G.M. (2012) Observation of changes in model-based insulin sensitivity during haemodialysis transitions for critically ill patients. Budapest, Hungary: 8th IFAC Symposium on Biological and Medical Systems (BMS12), 29-31 Aug 2012. Biological and Medical Systems, 8, 1, 349-354.
6. Othman, N. A., Docherty, P., Jamaludin, U. K., & Chase, G. (2012, December). Clinical evaluation and interpretation of a proportional-derivative control model for endogenous insulin secretion response to glucose. In *Biomedical Engineering and Sciences (IECBES), 2012 IEEE EMBS Conference on* (pp. 316-320). IEEE.
7. Preiser, J. C., Jamaludin, U., Docherty, P., Chase, J. G., Le Compte, A. J., Shaw, G. M., & Desaive, T. (2011). Enteral nutrition-associated incretin effect in the critically ill. In *Proceedings of the 33rd Congress of Clinical Nutrition and Metabolism (ESPEN 2011)*.
8. Pretty, C.G., Docherty, P.D., Pfeiffer, L., Jamaludin, U., Shaw, G.M., Le Compte, A.J., Chase, J.G. (2011) Endogenous insulin secretion and suppression during and after sepsis in critically ill patients – implications for TGC protocols. Brussels, Belgium: 31st International Symposium on Intensive Care and Emergency Medicine (31st ISICEM), 22-25 Mar 2011.
9. Pretty, C. G., Docherty, P. D., Lin, J., Pfeifer, L., Jamaludin, U., Shaw, G. M., Le Compte, A. J., & Chase, J. G. (2011). Endogenous insulin secretion and suppression during and after sepsis in critically ill patients: implications for tight glycemic control protocols. *Critical Care*, 15, 1-190.
10. Preiser, J. C., Jamaludin, U., Docherty, P., Chase, G., Le Compte, A. J., Shaw, G. M., & Desaive, T. (2011). OP006 ENTERAL NUTRITION-ASSOCIATED INCRETIN EFFECT IN THE CRITICALLY ILL. *Clinical Nutrition Supplements*, 6(1), 3.
11. F. M. Suhaimi, J. G. Chase, C. G. Pretty, G. M. Shaw, N. N. Razak, and U. K. Jamaludin, (2018) "Insulin sensitivity and sepsis score: A correlation between model-based metric and sepsis scoring system in critically ill patients," *Biomedical Signal Processing and Control*, vol. 32, pp. 112-123.
12. Rao NT, Oumer AN, Jamaludin UK, (2016) " State-of-the-art on flow and heat transfer characteristic of supercritical CO2 in various channels" *The Journal of Supercritical Fluids*, vol. 116, pp. 132-147.
13. Jamaludin UK, Suhaimi FM, Razak NNA, Ralib AM, Nor MBM (2017), "Estimation of Plasma Insulin and Endogenous Insulin Secretion in Critically Ill Patients Using Intensive Control Insulin-Nutrition-Glucose Model" *Advanced Science Letters*, vol. 23 (6), pp. 5511-5514
14. Suhaimi FM, Jamaludin UK, Razak NNA, Ralib AM, Nor MBM (2017), " Performance of Glycemic Control Protocol and Virtual Trial" *Advanced Science Letters*, vol. 23 (6), pp. 5415-5418
15. Razak A, Razak NNA, Ahamad N, Suhaimi FM, Jamaludin UK (2015), "Virtual trial and monte carlo analysis of model-based glycaemic control protocol with reduced nursing effort" *Jurnal Teknologi*, vol. 77(7), pp. 55-59
16. Jamaludin UK, Suhaimi FM, Razak NNA, Dzaharudin F, Ralib AM, Nor MBM (2016), " Mathematical Modelling of glucose-insulin system behaviour in Hospital Tengku Ampuan Afzan Intensive Care Unit Patients" *APRN Journal of Engineering and Applied Sciences*, vo. 11(18), pp. 10899-10903.
17. Rosly CZ, Jamaludin UK, Azahari NS, Mu'tasim MAN, Oumer AN, Rao NT (2016), "Parametric Study on Efficiency of Archimedes Screw Turbine" *APRN Journal of Engineering and Applied Sciences*, vo. 11(18), pp. 10904-10908.

List of Books

1. A book chapter entitled "Incretin Effects and Enteral Feed Transitions" in Diet and Nutrition in Critical Care, 2014. Publisher Springer New York, pp 1-14.

List of Research / Project

1. Microhydro Generator - (CAG)
2. Hybrid Power Train (UMP MECHAPRO SHELL ECO-MARATHON) – (CAG)
3. Management of Hyperglycaemia in ICU patients in Christchurch Hospital and Hospital Tengku Ampuan Afzan, Kuantan, Malaysia (collaboration project with UIAM, USM, and UNITEN – completed).
4. Development and Optimization of Screw Blade for Sustainable Micro-Hydroelectric Power (on going).
5. Modelling of incretin mechanism in glucose-insulin control system (collaboration project with University of Canterbury, NZ, UIAM, USM, and UNITEN – on going)
6. Development of A Model-Based Algorithm for Blood Glucose Control in Malaysian Intensive Care Unit Patients (collaboration project with University of Canterbury, NZ, UIAM, USM, and UNITEN – on going)
7. Development of Glomerular Filtration Rate Monitor Based on Creatinine Kinetic Modelling in Critically Ill Patients (*member*, collaboration project with UIAM – on going)
8. Design, safety and efficacy of an MPC glycaemic controller in a high-rate occupancy ICU (*member*, collaboration project with UNITEN, UIAM, USM – finished)
9. A Model-based Analysis on the Interrelationship of Diabetic Status, Glycaemic Control and Glycaemic Variability within Critically Ill (*member*, collaboration project with UNITEN, UIAM, USM – on going)

Awards / Research / Achievements

1. Best Belgian Abstract Award at the ESPEN conference in Sweden. The research is entitled: “ Enteral nutrition – associated incretin in the critically ill, “ 33rd Excellence in Science, Practice and Education in Nutrition 2010 – 33rd Congress of Clinical Nutrition and Metabolism (ESPEN 2011), Gothenburg, Sweden, September 3 – 6, 2011.
2. Best Female athlete in Bersatu Games 2012 in Christchurch, New Zealand.
3. APC 2015
4. 3rd Prize (Science) in MUCET 2015 conference under “Mathematical Modelling of Glucose-Insulin System Behaviour in Hospital Tengku Ampuan Afzan Intensive Care Unit Patients”

List of Course / Conference Attended

1. 11th Annual Diabetes Technology Meeting (DTM 2011) in San Francisco from October 27 – 29, 2011. (Abstract)
2. 8th IFAC Symposium on Biological and Medical Systems (BMS 2012) in Budapest, Hungary from August 29 – 31, 2012. (Full paper submission: (Oral) Observation of Changes in Model – Based Insulin Sensitivity During Haemodialysis Transitions for Critically Ill Patients).
3. 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society in conjunction with 52nd Annual Conference of Japanese Society for Medical and Biological Engineering (JSMBE) in Osaka from July 3 – 7, 2013. (Full paper submission: (Oral) Robustness Analysis of a Model – Based Control Protocol for Transition from ICU to Less Critical Ward; (Poster) Impact of Haemodialysis on Insulin Sensitivity of Sepsis Patients with Acute Renal Failure (ARF) in Critical Care)
4. MUCET 2015 11th -13th October 2015. (Full paper submission: (Oral) Mathematical Modelling of Glucose-Insulin System Behaviour in Hospital Tengku Ampuan Afzan Intensive Care Unit Patients)
5. MUCET 2015 11th – 13th October 2015. (Full paper submission: (Oral) Identification of Optimum Parameter for Archimedes Screw Turbine).
- 6.

Subject Taught

Year 2013 : Computer Programming & Thermodynamics 2

Year 2014 : Computer Programming & Automatic Control

Year 2015 : Computer Programming, Automatic Control & (Numerical Method – Master)

Year 2016 : Automatic Control & (Fluids Mechanics – Diploma)

Year 2017 : Biomechanics & Automatic Control

Year 2018 : Automatic Control & (Electrical & Electronic Technology - Diploma)