



## BRIEF CV

### Dr. Fadhlur Rahman Mohd Romlay

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## Academic Qualifications

1. Ph.D. in Mechanical Engineering, 2013
2. MSc. in Mechanical & Materials Engineering, 2004
3. Eng. (Hons) in Mechanical Engineering, 2002.

## Brief Profile

Currently, F.R.M. Romlay is a senior lecturer at Faculty of Mechanical Engineering, Universiti Malaysia Pahang. He finished his Ph.D in 2013 with the research titled rotary ultrasonic motor utilizing piezoelectric ceramic materials. He graduated his Master of Science (Engineering) from Universiti Kebangsaan Malaysia in 2004. The research area was fatigue crack propagation simulation using boundary element method. His first degree was in 2002 in Mechanical Engineering from Universiti Kebangsaan Malaysia also.

F.R.M. Romlay starts his research 2004 by joining CNC and automation group at University Malaysia Pahang. He learnt a lot on CNC interpolator and successfully prototype CNC engraving machine in 2005 and CNC incremental forming machine in 2007. Then, in 2009 he continued his Ph.D in actuator research area to explore a new actuator working mechanism. After finish his Ph.D, he continued developing CNC laser machine utilizing fiber laser technology which is the latest laser technology currently.

Besides CNC research, he also applies motion control in automotive research that deal with actuator and controller. With closed relationship with Sapura Technical Centre as Sapura Research Fellow, he developed 4 post shaker system and semi active absorber system for Sapura Technical Centre Sdn. Bhd.

He was appointed by MIE Offshore Sdn. Bhd. as Finite Element (FE) fellow consultant to consult detail calculations of Petronas Utilities and equipment, most on structural strength. He also involved on fluid flow calculation through computational fluid dynamics (CFD) approach.

## Working Experiences / Appointment

2002	Research Officer at Dept. of Mechanical & Materials, Faculty of Engineering UKM.
2003-2004	Mechanical Engineering Laboratory Demonstrators of Dept. of Mechanical & Materials, Faculty of Engineering UKM
2004-2009	Lecturer of Universiti Malaysia Pahang (UMP)
2007- 2008	Appointed as Head of Industrial Training Program at Academic Service Center, Universiti Malaysia Pahang (UMP)
2008 – 2013	Ph.D in Mechanical Engineering (Design and Modeling of Ultrasonic Motor utilizing Piezoelectric Materials)
2009 – Now	Appointed as Senior Lecturer of Universiti Malaysia Pahang (UMP)
2009 – Now	Appointed as SAPURA Technical Centre Research Fellow.
2016 – Now	Appointed as MIE Offshore as Finite Element (FE) and Computational Fluid Consultant (CFD) Consultant

## Expert Area

CNC Control System.

Rapid Prototyping Process.  
Ultrasonic Actuator and Device.  
Fracture Mechanics & Structural Dynamics.

## Expertise / Research Interest

Applied Computational Mechanics and CNC system.  
Structural Strength using Finite Element (FE) approach.  
Computational Fluid Dynamic (CFD) calculation.

## Professional Qualification / Membership / Affiliation / Experience

### A) Membership of Professional Body

1. Member of International Association of Computational Mechanics (IACM), 2007 – Now.
2. Malaysian Association of Computational Mechanics (MACM), 16 December 2005 – Now.
3. Graduate Member of Board of Engineers Malaysia (BEM), 17 October 2006 – Now.

### B) Professional Experience.

1. Committee member of Malaysian Association of Computational Mechanics (MACM), 16 December 2005 – Now.

### C) Conference Professional Experience.

1. Organizing chair, Proceedings of *Mechanism Design Conference, 2008, Faculty of Mechanical Engineering, Universiti Malaysia Pahang*, 23 April 2008.
2. Key note speaker, F. R. M. Romlay & W. A. W. Yusoff, Gear Mechanism Analysis using Transient Finite Element Modelling, *Regional Conference on Computational Mechanics & Numerical Analysis (CMNA) 2006, Syiah Kuala Univ. Banda Aceh, Indonesia*, 12-14 June 2006.
3. Key-note Speaker, International conference on Simulation Reality 2004, MSC-Softwares, Malaysia, 7 Oct 2004.

## List of Publications

### A) International and National Journal

1. A. Jakin, M. N. Fakir & F. R. M. Romlay, Knowledge Based Service Oriented Architecture for Automotive Product Development: South East Asia Scenario, *International Journal of Services Technology and Management*, Indescience (In publishing).
2. M.F.M. Sunif and F.R.M. Romlay, Travelling Wave Rotary Ultrasonic Motor with Novel Hollow Segments Stator, *International Journal of Control Theory and Applications (IJCTA)*" Vol. 0, Issue. 3, pp. 277-282, 2017.
3. FRM Romlay, WAW Yusoff, KAM Piah, Increasing the efficiency of traveling wave ultrasonic motor by modifying the stator geometry, *Ultrasonics*, 64, 177-185, 2016.
4. M Ishak, NFM Noordin, ASK Razali, LHA Shah, FRM Romlay, Effect of filler on weld metal structure of AA6061 aluminum alloy by tungsten inert gas welding, *International Journal of Automotive and Mechanical Engineering* 11, 2438, 2015.
5. M.Z. Baharom, G. Priyandoko, M. F. M. Romlay, M. S. M. Sani, M. S. Salleh & M. H. M. Yusof, Voltage Induced Effect for Vibration Suppression Using Eddy Current on Power Steering, *ARPN Journal of Engineering and Applied Sciences*, Asian Research Publishing Network, Vol. 10(17), 2015.
6. Failure prediction for automotive suspension springs using Gaussian and Monte Carlo method  
F.R.M. Romlay, H. Ouyang, M.K. Nizam, *International Journal of Vehicle Design*, DOI: 10.1504/IJVD.2011.038045, 2011, Pages 23-34.
7. F.R.M. Romlay, H. Ouyang, A.K. Ariffin, N.A.N. Mohamed, *Engineering Analysis with Boundary Elements, Volume 34, Issue 3, March 2010, Pages 297-305*.
8. F. R. M. Romlay, Modeling of a Surface Contact Stress for Spur Gear Mechanism using Static and Transient Finite Element Method, *Journal of Structural Durability & Health Monitoring (SDHM)*, Tech Science Press, vol.4, no.1, 2008, pp.19-27, ISSN: 1930-2983 (print), ISSN: 1930-2991 (on-line).
9. F. R. M. Romlay & A. Mokhtar, Machine Parameter Optimization for Wire – Electric Discharge Machining, *International Conference on Computational Mechanics & Experimental & Science (ICCES 2008)*, Honolulu Hawaii, USA, ISBN-10: 0-9717880-5-7 ISBN-13: 978-0-9717880-5-3, 17-21 March 2008.
10. K. Ariffin & F.R.M. Romlay, Deterministic and Probabilistic Approach in Modelling of Fatigue Crack Propagation, *International Journal of Computational Methods*, 2006. 463–468, Springer.

## **B) International and National Conference Papers**

11. F. A. Adnan & F.R.M. Romlay, Mask Projection Generation for Digital-Light-Processing 3D Printing, International Conference on Composites or Nano Engineering on 16<sup>th</sup> -22<sup>nd</sup> July 2017 at Rome, Italy.
12. F.R.M. Romlay, M. F. M. Sunif, W. S.W. Harun & A. H. Ahmad, PZT Hydrothermal Synthesis and Characterization for use in Sensor and Actuator Application, International Conference on Composites or Nano Engineering on 16<sup>th</sup> -22<sup>nd</sup> July 2017 at Rome, Italy.
13. M. F. M. Sunif & F. R. M. Romlay, Travelling Wave Rotary Ultrasonic Motor with Novel Hollow Segments Stator, International Conference on Engineering & Technology, Computer, Basic & Applied Sciences, Osaka, 2016.
14. F. R. M. Romlay, *Proceedings of Mechanism Design Conference 2008*, Faculty of Mechanical Engineering, Universiti Malaysia Pahang, ISBN: 978-967-5080-35-7, 23 April 2008.
15. F. R. M. Romlay & A. Mokhtar, Optimization of a Cutting Process for Wire-Electric Discharge Machining at Welding Joint Section, *Conference on Product Design 2007, Batu Ferengi, Penang, Malaysia*, 10-11 December 2007.
16. F. R. M. Romlay & R. M. A. R. Adanan, Integrated of Stepper and DC Motor Control System Using Microcontroller for Automatic Dishwasher, *Conference on Applications and Design in Mechanical Engineering, Kangar, Perlis, Malaysia*, 25-26 October 2007.
17. F. R. M. Romlay, 100% Student Centered Learning Concept in Teaching Approach at Mechanical Engineering Faculty, University Malaysia Pahang, *Engineering Education Conference 2007, M. S. Garden Kuantan, Pahang*, 3 May 2007.
18. F. R. M. Romlay, W. A. W. Yusoff, W. A. F. W. Musa, & A. Mokhtar, Modeling of a Surface Contact Stress for a Gear System using Finite Element Method, *Malaysian Technical Universities Conference on Engineering and Technology (MUCET 2006), Batu Pahat, Johor Malaysia*, 19 -20 December 2006.
19. F. R. M. Romlay & M. S. M. Sani, Model Modification of Wira Center Member Bar, *Regional Conference on Vehicle Technology, RIVET 2006, PWTC Kuala Lumpur Malaysia*, 3-5 July 2006.
20. F. R. M. Romlay & W. A. W. Yusoff, Gear Mechanism Analysis using Transient Finite Element Modelling, *Regional Conference on Computational Mechanics & Numerical Analysis (CMNA) 2006, Syiah Kuala Univ. Banda Aceh, Indonesia*, 12-14 June 2006.
21. F. R. M. Romlay, Monte Carlo Method in Engineering Application, *National Seminar On Science, Technology and Social Sciences, STSS 2006, Swiss Garden, Kuantan Pahang Malaysia*, 29-31 May 2006.
22. F.R.M. Romlay & A. K. Ariffin, Modeling of fatigue crack propagation using Boundary Element Method, *The International Conference on Computational & Experimental Mechanics, UKM 2005*.

## **List of Book**

1. F. R. M. Romlay, Knowledge Based Service Oriented Architecture for Automotive Part, Special Issue on Service-Oriented Software Architecture and Assessment in the Future IOT Environment, Indescience, 2017.
2. Role of Finite Element Analysis in Designing Multi-axes Positioning for Robotic Manipulators, T.T. Mon, F.R. Mohd Romlay and M.N. Tamin, *Advances in Robot Manipulators*, 565–588, ISBN: 978-953-307-070-4, *Intech*, 2010.
3. *Proceedings of Mechanism Design Conference*, ISBN: 978-967-5080-35-7, *Faculty of Mechanical Engineering, Universiti Malaysia Pahang 2008*, 10 July 2008.
4. K. Ariffin & F.R.M. Romlay, *Computational Methods: Deterministic and Probabilistic Approach in Modelling of Fatigue Crack Propagation*, 463–468, ISBN: 9781402039522, *Springer*, 2005.

## **List of Consultancy**

1. Root Cause Analysis on Cement Gearbox Crusher Machine, 2018.
2. FEA detail calculation on Internal Ring Support Design for Petronas Chemical Ethylene Sdn. Bhd. 2018.
3. FEA and CFD analysis on E-001 and E-002 Heat Exchanger Pressure Leaking Investigation for Petronas Chemical Ethylene Sdn. Bhd., 2017-2018.
4. Detail Design Calculation on I-Tubes structure using FEA for Semarak Petro Sdn. Bhd. 2017.
5. FEA analysis of Life Boat Weldment Structure for Sapura Kencana Berhad., 2017.
6. FEA analysis on Valve Clamp Chamber for Petronas Gas Berhad through MIE Offshore Sdn. Bhd. 2017.
7. CFD analysis on BTX Stripper for Petronas Penapisan (Terengganu) Sdn. Bhd., PP(T)SB through MIE offshore Sdn. Bhd., 2016.

8. CFD analysis of Pipe-line Flow Analysis of Petronas Carigali through MMC Oil and Gas Berhad, 2014.
9. Mechanical Design Course for company of RWNA Engineering Sdn. Bhd., 2012-2013.
10. Dynamic analysis of Passenger Car Absorber System for Sapura Industrial Sdn. Bhd., 2012.
11. Cold Cutting Machine Development for company of RWNA Engineering Sdn. Bhd., 2012.
12. Material Separation Process using EDM Wire Cut for company of ASTURI Metal Sdn. Bhd., UCTQ0144 , 7-21 September 2011.
13. Solid Works Training for company of Aviasi Industri Sdn. Bhd. on 15 August and 5 September 2007.
14. Consultation for company of Petronas Carigali Angsi-B Crane B-7020 FEA Structural Analysis. Researcher, through RIA-Solution Sdn Bhd. Vot No. UIC080102, Apr ~ Dec 2008.

### List of Research / Project

1. Flagship Grant titled Design and Development of Campus E-bike, RM145,000, 1 July 2017-30 June 2019.
2. Lab2Market Grant titled Industrial Testing of a 3-Axis CNC Machine using the Pre-defined Closest Distance Volume Interpolator for Tailor Welded Blanks, RM150,000, 1 July 2017 -30 June 2018.
3. Technofund Grant titled Tailor Welded Blanks (TWB) Equipment Development (TF0713D278), RM 1, 895, 000, 1 July 2017- 30 June 2019, collaborate with PHN Industry Sdn. Bhd.
4. Knowledge Transfer Grant titled Technology Transfer For The Mass Manufacturing of Plastic Optical Fiber (POF) Coupler, RM 176 000 as project leader, 1/12/2015-30/11/2017, collaborate with NXPhotonics Sdn. Bhd.
5. Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education Malaysia. Total research grant RM 90, 000 as a researcher titled Characterizing Of Electrical And Thermal Characteristic Of Piezoelectric Ultrasonic Motor For A Better Speed And Torque Performance, RDU130148,1 December 2013 – 30 November 2016.
6. Prototype Research Grant of Ministry Higher Education Malaysia. Total amount RM200 000 as researcher titled Industrial Testing of a 3-Axis CNC Machine using the Pre-defined Closest Distance Volume Interpolator for Tailor Welded Blanks (TWBS) application. RDU120805, 1 August 2012 – 31 July 2014.
7. Techno-Fund Grant of Ministry of Science Technology Malaysia. Total amount RM 276 600 as researcher titled New Design Technology for Passenger Car (Absorber Module) with SAPURA Technical Centre, Bangi as the collaborator. TF1009D221, February 2011 - October 2011.
8. Pre-Commercialization Grant of Universiti Malaysia Pahang. Total grant RM 50 000 as member titled PCNC Machine Controller. UIC100304, Dec 2010 - Dec 2011.
9. E-Science Grant of MOSTI. Total amount RM 119 000 as researcher titled Development of Novel Ultrasonic Motor utilizing Piezoelectric Materials. RDU090504, Sept. 2009 – Sept. 2011.
10. E-Science Grant of Ministry Higher Education Malaysia. Total amount RM 127 600 as researcher titled Development of Linux based CNC Controller. RDU090501, June 2009 - June 2011.
11. Short Term Grant of University Malaysia Pahang. Total amount RM 19 000 as a project leader titled Development of a Drum Cutting and Clamping Machine for Industrial Application collaboration with KH Indah Maju Sdn. Bhd. RDU 070348, 1 September 2007 – 31 August 2008.
12. Short Term Grant of University Malaysia Pahang, as a project leader titled A New Invention of a Tyre Nut Removal, RDU 07/01/06, 23 May 2007- 22 May 2008.
13. Short Term Grant of University Malaysia Pahang, Total research grant RM 29, 000 as a researcher titled Design, Analysis and Development of Incremental Forming Process Utilizing PC- NC Control, RDU 07/03/06, 1 April 2007- 31 March 2008.
14. Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education. Total research grant RM 50, 000 as a researcher titled Experimental Verification of the Real-time Parametric General Curve Interpolator Based Upon Predefined-Closest- Distance Volume, RDU 07/01/2, 8 February 2007- 7 February 2008.
15. Short Term Grant of University College of Engineering & Technology Malaysia. Total research grant RM 45, 000 as a researcher titled Open-Architecture PC-Based CNC Controller, RDU 05/1/5, 21 January 2005- 19 July 2006.

### Research Achievements / Awards

1. Silver medal on CITREX 2018, Development of Semi-Active Suspension System, Universiti Malaysia Pahang, 2018.
2. 3<sup>rd</sup> place of Monetary Reward on '*Malam Aspirasi Kecermelangan Universiti Bersama Industri*', MS Garden Hotel, Kuantan, Pahang, Malaysia 31 October 2008.
3. Bronze Medal on Pertandingan Rekacipta & Inovasi UMP 2008, *Fish Grading Machine for SME/SMI Industry*, Kuantan Parade, Kuantan, Pahang, Malaysia, 22 -24 August 2008.

4. Bronze Medal ITEX 2008, *Design and Development of PC-NC Incremental Forming*, 19<sup>th</sup> International Invention, Innovation, Industrial Design and Technology Exhibition (ITEX 2008), Kuala Lumpur Convention Centre (KLCC), 09-11 May 2008.
5. Silver Medal IENA 2007, *Tyre Nut Removal for 114 mm Pitch Circle Diameter (PCD)*, International Trade Fair, Ideas-Inventions -New Products, Exhibition Centre Nuremberg Germany, 31 October - 4 November 2007.
6. Gold Medal ITEX 2007, *TREMOVAL*, 18<sup>th</sup> International Invention, Innovation, Industrial Design and Technology Exhibition (ITEX 2007), Kuala Lumpur Convention Centre (KLCC), 18- 20 May 2007.
7. Bronze Medal on MTE 2007, *Development of a Tyre Nut Removal for 114 mm Pitch Circle Diameter (PCD)*, Putra World Trade Centre, Kuala Lumpur, Malaysian Technology Expo 2007, 29-31 March 2007.
8. Second place on Best Research Project Award, *Development of a Tyre Nut Removal for Proton Waja Car*, Kolej Universiti Kejuruteraan & Teknologi Malaysia (KUKTEM) 2006 Quality Day and Award Presentation Ceremony, 19 October 2006.
9. Gold Medal on ITEX 2006, *Open Architecture Personal Computer-Numerical Controller (OAPC-NC) with an Efficient Reference-Pulse CNC Interpolator*, 17<sup>th</sup> International Invention, Innovation, Industrial Design and Technology Exhibition (ITEX 2006), Kuala Lumpur Convention Centre (KLCC), 19- 21 May 2006.

### Patent

1. *Tyre Nut Removal for 114 mm Pitch Circle Diameter (PCD)*, Patent Application No.: PI 20080330, 20 February 2008.
2. Development of Novel Rotary Stator of Ultrasonic Motor Utilizing Piezoelectric Material, PI 2012001618, 2012.

### List of Course / Conference Attended and Conducted

1. Rapid Prototyping Short Course as trainer, University Malaysia Pahang, Malaysia, 20-25 July 2014.
2. High Impact Journal Writing Course, Kuantan Pahang Malaysia, 6-17 July 2014.
3. Hands on Training on Fiber Laser Technology, Precision Laser Solution Ltd., Singapore 25-27 April 2014.
4. Automatic Control Lab Equipment Training (NI MyRIO), Kuala Lumpur Malaysia, 24-26 February 2014.
5. ICMER 2013 Journal Reviewer workshop, Kuala Terengganu, Malaysia, 16-17 July 2013.
6. Ceramic Symposium, Saranaree University, Thailand, 2012.
7. Process Control Short Course, Cranfield University, UK, 15-20 March 2009.
8. ModeFRONTIER University Program Course, Cranfield University, UK, 23-24 February 2009.
9. Visiting researcher at Nanotechnology Centre, Cranfield University, U.K., 5 January to 4 April 2009
10. Conference on Commercialization and Technology Transfer by MTDC, Hilton KL, 3-4 December 2007.
11. Visual Basics Course, Faculty of Mechanical Engineering, UMP, 6 September 2007.
12. Soft Skills Workshop organized by Academic Service Centre UMP, Suria Cherating Resort, Pahang, Malaysia, 20-22 May 2007.
13. Development of Manufacturing Engineering Faculty Workshop, Awana Kijal, Terengganu, Malaysia, March 2007.
14. Research Methodology Course (SLAB), KUKTEM, Pahang, Malaysia, 5-9 June 2006 & 12-13 June 2006.
15. Website Workshop, KUKTEM, Pahang, Malaysia, 12-14 April 2006.
16. ME Scope Software – Modal Analysis, KUKTEM, Pahang, Malaysia, 9-10 March 2006.
17. 4 – Axis CNC Turn Mill Programming (Intermediate Level), TATI Terengganu, 17-21 April 2006.
18. UG NX3 CAD, UG NX3 CAM & UG NX3 Mold Wizard Software Training, KUKTEM, 5-23 December 2005.
19. TOPS 600 V3.01 Software Training for Machine V85S, KUKTEM, Pahang, Malaysia, 1-5 August 2005.
20. Evaluation. Testing & Measuring Base on Taksonomy Bloom, Cherating, Pahang, Malaysia, 1-3 June 2005.
21. General and Special Induction Course, Cherating, Pahang, Malaysia, 14-30 April 2005.

### Referees

Prof. Ir. Dr. Wan Azhar Wan Yusoff,  
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