





# PROF. DATO' SERI IR. DR. NOOR AZUAN BIN ABU OSMAN

Professor

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#### **BIOGRAPHY**

Profesor Dato' Seri Ir. Dr. Noor Azuan Bin Abu Osman has achieved considerable distinction in his academic and professional pursuits. He graduated from the University of Bradford, UK with a B.Eng. Hons. in Mechanical Engineering and furthered his credentials with an MSc and Ph.D. in Bioengineering from the University of Strathclyde, United Kingdom.

A leading expert in biomechanics, Azuan's research spans various areas, with a particular focus on the measurements of human movement, the design of prosthetics, orthotics, and orthopaedic implants, as well as the development of instruments for assessing forces and joint motion. In 2004, his significant contributions to the development of the prosthetic socket were recognized with the BLESMA award from ISPO UK NMS.

Prof. Azuan has held a number of prestigious positions in his career. He served as the Deputy President of the Society of Medical and Biological Engineering (MSMBE), an affiliate of the International Federation for Medical and Biological Engineering (IFMBE). His roles have included being the Acting Registrar of UM, Dean of Engineering, Deputy Director of the Centre for Applied Biomechanics, and Coordinator of the Motion Analysis Laboratory at the Faculty of Engineering, University of Malaya.

Marking a notable advancement in his academic leadership, he was appointed as the Vice Chancellor of Universiti Tenaga Nasional (UNITEN) from 15th June 2022 until 5th November 2023. Subsequently, he continued his journey in higher education leadership by assuming the position of Vice Chancellor at Universiti Malaya starting on 6th November 2023.

Prof. Azuan has been distinguished with several honors for his professional achievements and service. In 2023, he was conferred the Darjah Gemilah Pangkuan Negeri (D.G.P.N) by the Governor of Penang, bestowing upon him the title of Dato' Seri, in recognition of his exceptional contributions to the field of engineering and higher education.



He is a prolific scholar with numerous publications in books, conference proceedings, and journals. His professional affiliations are testament to his expertise: he is a Chartered Engineer (C.Eng.) and Fellow (FIMechE) with The Institution of Mechanical Engineers, UK; a Chartered Professional Engineer (C.PEng) and Fellow (FIEAust) with Engineers Australia; and a Chartered Scientist (C.Sci.) and Professional Member (MICR) with The Institute of Clinical Research, UK.

Prof. Azuan's career is a testament to his dedicated commitment to the advancement of biomechanical engineering and his skillful navigation through the challenges of academic leadership.

# **ACADEMIC QUALIFICATION**

- PhD (BioEng)(Strathclyde,UK)(2005), (BIOMEKANIK / PROSTETIK DAN ORTOTIK)
  Strathclyde University, Scotland
- MSc (BioEng)(Strathclyde,UK)(1999), (Kejuruteraan Bioperubatan)
  Strathclyde University, Scotland
- BEng (Hons)(Mech)(Bradford,UK)(1997), (MECHANICAL ENGINEERING)
  Bradford University, Bradford, UK
- Diploma (Mech)(UTM)(1991), (Mechanical Engineering)
  Universiti Teknologi Malaysia (utm)

# **WORKING EXPERIENCE**

• 08 Jun 2022 -

05 Nov 2023

Naib Canselor/ketua Pegawai Eksekutif

Universiti Tenaga Nasional Sdn. Bhd. (uniten)

• 01 Nov 2017 -

31 Oct 2020

Timbalan Naib Canselor (akademik & Antarabangsa)

Universiti Malaysia Terengganu (umt)

#### **ADMINISTRATIVE DUTIES**

Vice-chancellor

06 Nov 2023 - present (Vice Chancellor's Office, Vice-chancellor)

Acting Registrar

07 Dec 2020 - 02 Jun 2022 (Registrar Office, Registrar)

• Executive Director

01 Jan 2012 - 31 Dec 2022 (National)

Dean

01 Jul 2016 - 31 Oct 2017 (Dean Office, Faculty of Engineering)

Dean

01 Jul 2014 - 30 Jun 2016 (Dean Office, Faculty of Engineering)

Acting Dean

10 Jan 2014 - 30 Jun 2014 (Dean Office, Faculty of Engineering)

Acting Dean

01 Sep 2013 - 09 Jan 2014 (Dean Office, Faculty of Engineering)

• Deputy Dean of Undergraduate

01 Jul 2011 - 30 Jun 2014 (University Malaya)

• Deputy Dean of Development

01 Mar 2012 - 30 Jun 2014 (University Malaya)

Deputy Dean

01 Jul 2011 - 01 Sep 2013 (Dean Office, Faculty of Engineering)

• Head of Department

01 Sep 2009 - 01 Jul 2011 (Department of Biomedical Engineering, Faculty of Engineering)

Head of Department

01 Apr 2006 - 30 Jun 2011 (University Malaya)

Head of Department

01 Sep 2007 - 31 Aug 2009 (Department of Biomedical Engineering, Faculty of Engineering)

Head of Department

01 Sep 2006 - 31 Aug 2007 (Department of Biomedical Engineering, Faculty of Engineering)

• Head of Department

01 Jun 2006 - 31 Aug 2006 (Department of Biomedical Engineering, Faculty of Engineering)



# **AWARD AND STEWARDSHIP**

Darjah Gemilang Pangkuan Negeri (d.g.p.n)

2023, Pulau Pinang, (National)

• NATIONAL ACADEMIC AWARD (Category: Innovation and Product Commercialization)

2022, Ministry of Higher Education Malaysia, National

Degree Awards

2019, SARAWAK, (State)

Kesatria 2017

2017, MInistry of Tourism and Culture Malaysia, (National)

• Certificate of Excellent Service

2016, Universiti Malaya

• UM Excellence Award

2015, Universiti Malaya

Excellence Service Award

2012, Universiti Malaya

• Certificate of Excellent Service

2009, Universiti Malaya

• Certificate of Excellent Service

2007, Universiti Malaya

• Excellence Service Award

2006, Universiti Malaya

• Certificate of Excellent Service

2002, Universiti Malaya

### **PUBLICATIONS**

Article in Journal

- 1. Al-Hashimi, Z., Khamis, T., Al Kouzbary, M., Arifin, N., Mokayed, H., & Abu Osman, N. A. (2025). A decade of machine learning in lithium-ion battery state estimation: a systematic review. Ionics, 1-27.
- 2. Soudagar, M. E. M., Umarfarooq, M. A., Gouda, P. S., Banapurmath, N. R., Osman, N. A., Ramesh, S., ... & Bisht, Y. S. (2025). Implications of end cooling rates on the Mechanical, Viscoelastic, and interlaminar fracture properties of the unidirectional glass Fiber/Epoxy composites. Composites Part A: Applied Science and Manufacturing, 108631.
- 3. Ab Rasid, A. M., Muazu Musa, R., Abdul Majeed, A. P., Musawi Maliki, A. B. H., Abdullah, M. R., Mohd Razmaan, M. A., & Abu Osman, N. A. (2024). Physical fitness and motor ability parameters as predictors for skateboarding performance: A logistic regression modelling analysis. PLoS one, 19(2), e0296467.
- 4. Ahmad Zahudi, A. Z., Usman, J., & Abu Osman, N. A. (2024). Exploring the impact of bowling ball properties and performance through the use of technology: An analysis of bowling ball motion. Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology, 17543371241260099.
- 5. Al Kouzbary, M., Al Kouzbary, H., Liu, J., Shasmin, H. N., Arifin, N., & Osman, N. A. A. (2024). Analysis of human ambulation as a chaotic time-series: with nonlinear dynamics tools. Computer Methods in Biomechanics and Biomedical Engineering, 1-13.
- 6. El Ghailassi, I., Hashim, N. A., Abd Razak, N. A., Osman, N. A. A., Gholizadeh, H., & Astuti, S. D. (2024). Investigation of EMG Parameters for Transtibial Amputees While Treadmill Walking with Different Speeds: A Preliminary Study. IEEE Access. 1(1).
- 7. Ibrahim, M. T., Hashim, N. A., Abd Razak, N. A., Abu Osman, N. A., Gholizadeh, H., & Astuti, S. D. (2024). Techniques for Measuring the Fluctuation of Residual Lower Limb Volume in Clinical Practices: A Systematic Review of the Past Four Decades. Applied Sciences, 14(6), 2594.
- 8. Khamis, T., Al Kouzbary, M., Al Kouzbary, H., Mokayed, H., Abd Razak, N. A., & Osman, N. A. A. (2024). Automated transtibial prosthesis alignment: A systematic review. Artificial Intelligence in Medicine, 102966.
- 9. Liu, J., Liu, J., Cheah, P. Y., Al Kouzbary, M., Al Kouzbary, H., Yao, S. X., ... & Abu Osman, N. A. (2024). Design and preliminary verification of a novel powered ankle–foot prosthesis: From the perspective of lower-limb biomechanics compared with ESAR foot. Plos one, 19(6), e0303397.
- 10. Malaheem, M. S., Abd Razak, N. A., & Osman, N. A. A. (2024). A systematic review of methods used to assist transtibial prosthetic alignment decision-making. Prosthetics and Orthotics International, 10-1097.



- 12. Abu Osman, N. A., Nordin, N. I., Tan, K. C., Hosri, N. A. H. A., Pei, Q., Ng, E. P., ... & Chua, Y. S. (2023). Nanosizing Approach—A Case Study on the Thermal Decomposition of Hydrazine Borane. Materials, 16(2), 867.
- 13. Liu, J., Naeem, M. A., Al Kouzbary, M., Al Kouzbary, H., Shasmin, H. N., Arifin, N., ... & Abu Osman, N. A. (2023). Effect of Infill Parameters on the Compressive Strength of 3D-Printed Nylon-Based Material. Polymers, 15(2), 255.
- 14. Malaheem, M. S., Abd Razak, N. A., & Osman, N. A. A. (2023). A systematic review of methods used to assist transtibial prosthetic alignment decision-making. Prosthetics and Orthotics International, 10-1097.
- 15. Ngah, A. H., Kamalrulzaman, N. I., Mohamad, M. F. H., Abdul Rashid, R., Harun, N. O., Ariffin, N. A., & Abu Osman, N. A. (2023). Do Science and Social Science Differ? Multi-Group Analysis (MGA) of the Willingness to Continue Online Learning. Quality & Quantity, 57(4), 2957-2980.
- 16. Saad, S., Ibrahim, N., & Osman, N. A. A. (2023). Dynamic model of upper extremity and its application: a systematic review. RUSSIAN JOURNAL OF BIOMECHANICS, 1, 75-83.
- 17. Safee, M. K. M., & Osman, N. A. A. (2023). Relationship between postural stability and fall risk in young adult after lower limb muscle fatigue. Healthcare in Low-resource Settings, 11(s1).
- 18. Tham, L. K., Al Kouzbary, M., Al Kouzbary, H., Liu, J., & Abu Osman, N. A. (2023). Estimation of body segmental orientation for prosthetic gait using a nonlinear autoregressive neural network with exogenous inputs. Physical and Engineering Sciences in Medicine, 46(4), 1723-1739.
- 19. Zahudi, A. Z. A., Usman, J., & Osman, N. A. A. (2023). Relationship of anthropometric measurement and handgrip strength in Malaysian recreational tenpin bowlers. Pedagogy of Physical Culture and Sports, 27(2), 131-138.
- 20. Zainuddin, N. A. M. N., Razak, N. A. A., Karim, M. S. A., & Osman, N. A. A. (2023). Surface profile analysis of laminated transferoral prosthetic socket fabricated with different ratios of epoxy resin and acrylic resin. Scientific reports, 13(1), 2664.
- 21. Ab Rasid, A. M., Musa, A., Abdullah, M. A., Abdul Majeed, A. P., Mohd Razmaan, M. A., Abdullah, M. R., ... & Musa, R. M. (2022). Test-retest reliability of customised inertial measurement units (IMUs) in evaluating skateboarding related manoeuvres. Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology.
- 22. Al Kouzbary, M., Al Kouzbary, H., Liu, J., Khamis, T., Al-Hashimi, Z., Shasmin, H. N., ... & Abu Osman, N. A. (2022). Robotic Knee Prosthesis with Cycloidal Gear and Four-Bar Mechanism Optimized Using Particle Swarm Algorithm. In Actuators. MDPI, 11(9), 253.
- 23. Hashim, N. A., Abd Razak, N. A., Shanmuganathan, T., Jaladin, R. A., Gholizadeh, H., & Osman, N. A. A. (2022). On the use of virtual reality for individuals with upper limb loss: a systematic scoping review. European journal of physical and rehabilitation medicine, 58(4), 612–620.
- 24. Liu, J., Abu Osman, N. A., Al Kouzbary, M., Al Kouzbary, H., Abd Razak, N. A., Shasmin, H. N., & Arifin, N. (2022). Stiffness estimation of planar spiral spring based on Gaussian process regression. Scientific Reports, 12(1), 1-15.
- 25. Liu, J., Osman, N. A. A., Kouzbary, M. A., Kouzbary, H. A., Razak, N. A. A., Shasmin, H. N., & Arifin, N. (2022). Optimization and Comparison of Typical Elastic Actuators in Powered Ankle-foot Prosthesis. International Journal of Control, Automation and Systems, 20(1), 232-242.
- 26. Musa, R. M., Hassan, I., Abdullah, M. R., Azmi, M. N. L., Majeed, A. P. A., & Osman, N. A. A. (2022). A longitudinal analysis of injury characteristics among elite and amateur tennis players at different tournaments from electronic newspaper reports. Frontiers in Public Health, 10.
- 27. Ngah, A. H., Kamalrulzaman, N. I., Mohamad, M. F. H., Rashid, R. A., Harun, N. O., Ariffin, N. A., & Osman, N. A. A. (2022). The sequential mediation model of students willingness to continue online learning during the COVID-19 pandemic. Research and Practice in Technology Enhanced Learning, 17(1), 1-17.
- 28. Sobh, K. N. M., Abd Razak, N. A., & Osman, N. A. A. (2022). A FSR Sensor Cuff to Measure Muscle Activation During Strength and Gait Cycle for Lower Limb. IEEE Access, 10, 106135-106147.
- 29. Abdullah, M. A., Ibrahim, M. A. R., Shapiee, M. N. A., Zakaria, M. A., Razman, M. A. M., Musa, R. M., ... & Majeed, A. P. A. (2021). The classification of skateboarding tricks via transfer learning pipelines. PeerJ Computer Science, 7, e680.
- 30. Al Kouzbary, H., Al Kouzbary, M., Tham, L. K., Liu, J., Shasmin, H. N., & Osman, N. A. A. (2021). Generating an Adaptive and Robust Walking Pattern for a Prosthetic Ankle–Foot by Utilizing a Nonlinear Autoregressive Network With Exogenous Inputs. IEEE Transactions on Neural Networks and Learning Systems, 33(11), 6297-6305.
- 31. Hashim, N. A., Abd Razak, N. A., & Osman, N. A. A. (2021). Comparison of conventional and virtual reality box and blocks tests in upper limb amputees: A case-control study. IEEE Access, 9, 76983-76990.
- 32. Hashim, N. A., Abd Razak, N. A., Gholizadeh, H., & Osman, N. A. (2021). Video Game Based Rehabilitation Approach for Individuals Who Have Undergone Upper Limb Amputation: Case-Control Study. JMIR serious games, 9(1), e17017.
- 33. Kes, S. K., Afifuddeen, M., Nizam, M., Abd Razak, N. A., & Abu Osman, N. A. (2021). Biomechanical Analysis of an Improvement of Prosthetic Liner using Polyurethane Focusing at the Anterior-Distal Part of Residual Limb: A Case Study. Sains Malaysiana, 50(9), 2713-2725.



- 35. Mohd Safee, M. K., & Abu Osman, N. A. (2021). Effect of lower limb muscle fatigue on fall risk for transferoral amputee: a pilot study. Occupational therapy international, 2021.
- 36. Musa, R. M., Abdul Majeed, A. P., Suhaimi, M. Z., Abdullah, M. R., Mohd Razman, M. A., Abdelhakim, D., & Abu Osman, N. A. (2021). Identification of high-performance volleyball players from anthropometric variables and psychological readiness: A machine-learning approach. Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology, 237(4).
- 37. Sobh, K. N. M., Abd Razak, N. A., & Abu Osman, N. A. (2021). Investigation of EMG parameter for transtibial prosthetic user with flexion and extension of the knee and normal walking gait: A preliminary study. Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine, 235(4), 419-427.
- 38. Tham, L. K., Osman, N. A. A., Al Kouzbary, M., & Aminian, K. (2021). Biomechanical Ambulatory Assessment of 3D Knee Angle Using Novel Inertial Sensor-Based Technique. IEEE Access, 9, 36559-36570.
- 39. Tripathy, A., Sharma, P., Pramanik, S., Silva, F. S., & Osman, N. A. B. A. (2021). Armalcolite nanocomposite: A new paradigm for flexible capacitive humidity sensor. IEEE Sensors Journal, 21(13), 14685-14692.
- 40. Al Kouzbary, M; Abu Osman, NA; Al Kouzbary, H; Shasmin, HN; Arifin, N (2020). Towards Universal Control System for Powered Ankle-Foot Prosthesis: A Simulation Study. International Journal of Fuzzy Systems, 22, 1299-1313.
- 41. Arifin, N; Abu Osman, NA; Ali, S (2020). Postural Stability Strategies in Transtibial Amputees during Quiet Standing in Altered Sensory Conditions Wearing Three Types of Prosthetic Feet. Journal of Mechanics in Medicine and Biology, 20(2), 1950071.
- 42. Ibrahim, N., Abu Osman, N. A., Mokhtar, A. H., Arifin, N., Usman, J., & Shasmin, H. N. (2022). Contribution of the arm segment rotations towards the horizontal ball and racket head velocities during forehand long shot and drop shot services in table tennis. Sports biomechanics, 21(9), 1065-1081.
- 43. Khan, SJ; Khan, SS; Usman, J; Mokhtar, AH; Abu Osman, NA (2020). Orthoses versus gait retraining: Immediate response in improving physical performance measures in healthy and medial knee osteoarthritic adults. Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine 234(7), 749-757.
- 44. Mok, C. F., Ching, Y. C., Osman, N. A. A., Muhamad, F., Hai, N. D., Choo, J. H., & Hassan, C. R. (2020). Adsorbents for removal of cationic dye: nanocellulose reinforced biopolymer composites. Journal of Polymer Research, 27, 1-15.
- 45. Mok, CF; Ching, YC; Abu Osman, NA; Muhamad, F; Junaidi, MUM; Choo, JH (2020). Preparation and characterization study on maleic acid cross-linked poly(vinyl alcohol)/chitin/nanocellulose composites. Journal of Applied Polymer Science, 137(35), 49044.
- 46. Mok, CF; Ching, YC; Muhamad, F; Abu Osman, NA; Hai, ND; Hassan, CRC (2020). Adsorption of Dyes Using Poly(vinyl alcohol) (PVA) and PVA-Based Polymer Composite Adsorbents: A Review. Journal of Polymers and the Environment, 28, 775-793.
- 47. Shaari, IH; Abu Osman, NA; Shasmin, HN (2020). A case study on interface pressure pattern of two garment orthoses on a child with cerebral palsy. Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine, 234(8), 884-894.
- 48. Touri, M; Mortarzadeh, F; Abu Osman, NA; Dehghan, MM; Milan, PB; Farzad-Mohajeri, S; Mozafari, M (2020). Oxygen-Releasing Scaffolds for Accelerated Bone Regeneration. ACS Biomaterials Science & Engineering, 6(5), 2985 2994.
- 49. Ahmad, A; Abu Osman, NA; Mokhtar, H; Mehmood, W; Kadri, NA (2019). Analysis of the interface pressure exerted by the Cheneau brace in patients with double-curve adolescent idiopathic scoliosis. Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine, 233(9), 901-908.
- 50. Hakamivala, A., Nojoomi, A., Aminian, A., Farzadi, A., & Osman, N. A. A. (2019). Parametric process optimization to improve the accuracy and mechanical properties of 3D printed parts. MRS Advances, 4(24), 1383-1392.
- 51. Khan, SJ; Khan, SS; Usman, J; Mokhtar, AH; Abu Osman, NA (2019). Combined effects of knee brace, laterally wedged insoles, and toe-out gait on knee adduction moment and fall risk in moderate medial knee osteoarthritis patients. Prosthetics and Orthotics International, 43(2), 148-157.
- 52. Mehmood, W; Abd Razak, NA; Lau, MS; Chung, TY; Gholizadeh, H; Abu Osman, NA (2019). Comparative study of the circumferential and volumetric analysis between conventional casting and three-dimensional scanning methods for transtibial socket: A preliminary study. Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine, 233(2), 181-192.
- 53. Sakeran, H; Abu Osman, NA; Majid, MSA (2019). Gait Classification Using Mahalanobis-Taguchi System for Health Monitoring Systems Following Anterior Cruciate Ligament Reconstruction. Applied Sciences-Basel, 9(16), 3306.
- 54. Sakeran, H; Abu Osman, NA; Majid, MSA; Rahiman, MHF; Muhamad, WZAW; Mustafa, WA (2019). Gait Analysis and Mathematical Index-Based Health Management Following Anterior Cruciate Ligament Reconstruction. Applied Sciences-Basel, 9(21), 4680
- 55. Touri, M; Mortarzadeh, F; Abu Osman, NA; Dehghan, MM; Mozafari, M (2019). Optimisation and biological activities of bioceramic robocast scaffolds provided with an oxygen-releasing coating for bone tissue engineering applications. Ceramics International, 45(1), 805-816.



- 56. Al Kouzbary, M; Abu Osman, NA; Wahab, AKA (2018). Sensorless control system for assistive robotic ankle-foot. International Journal of Advanced Robotic Systems, 15(3).
- 57. Asadi-Eydivand, M; Solati-Hashjin, M; Abu Osman, NA (2018). Mechanical behavior of calcium sulfate scaffold prototypes built by solid free-form fabrication. Rapid Prototyping Journal, 24(8), 1392-1400.
- 58. Ghazali, MF; Abd Razak, NA; Abu Osman, NA; Gholizadeh, H (2018). Awareness, potential factors, and post-amputation care of stump flexion contractures among transtibial amputees. Turkish Journal of Physical Medicine and Rehabilitation, 64(3), 268 276.
- 59. Hashim, NA; Abd Razak, NA; Abu Osman, NA; Gholizadeh, H (2018). Improvement on upper limb body-powered prostheses (1921-2016): A systematic review. Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine, 232(1), 3-11.
- 60. Khan, SJ; Khan, SS; Usman, J; Mokhtar, AH; Abu Osman, NA (2018). Combined effects of knee brace, laterally wedged insoles and toe-in gait on knee adduction moment and balance in moderate medial knee osteoarthritis patients. Gait & Posture, 61, 243-249.
- 61. Khan, SJ; Khan, SS; Usman, J; Mokhtar, AH; Abu Osman, NA (2018). Effects of different foot progression angles and platform settings on postural stability and fall risk in healthy and medial knee osteoarthritic adults. Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine, 232(2), 163-171.
- 62. Shaari, IH; Abu Osman, NA; Shasmin, HN (2018). Interface Pressure of Lycra Orthosis at Different Postures in Children with Cerebral Palsy (CP). Sains Malaysiana, 47(4), 763-771.
- 63. Touri, M., Moztarzadeh, F., Osman, N. A. A., Dehghan, M. M., & Mozafari, M. (2018). Breathable tissue engineering scaffolds: An efficient design-optimization by additive manufacturing. Materials Today: Proceedings, 5(7), 15813-15820.
- 64. Touri, M; Mortarzadeh, F; Abu Osman, NA; Dehghan, MM; Mozafari, M (2018). 3D-printed biphasic calcium phosphate scaffolds coated with an oxygen generating system for enhancing engineered tissue survival. Materials Science Engineering C: Materials for Biological Applications, 84, 236-242.
- 65. Tripathy, A; Sharma, P; Sahoo, N; Pramanik, S; Abu Osman, NA (2018). Moisture sensitive inimitable Armalcolite/PDMS flexible sensor: A new entry. Sensors and Actuators B: Chemical, 262, 211-220.
- 66. Abd Razak, NA; Gholizadeh, H; Hasnan, N; Abu Osman, NA; Fadzil, SSM; Hashim, NA (2017). An anthropomorphic transhumeral prosthesis socket developed based on an oscillometric pump and controlled by force-sensitive resistor pressure signals. Biomedical Engineering / Biomedizinische Technik, 62(1), 49-55.
- 67. Abu Osman, NA; Eshraghi, A; Gholizadeh, H; Abas, WAW; Lechler, K (2017). Prosthesis donning and doffing questionnaire: Development and validation. Prosthetics and Orthotics International, 41(6), 571-578.
- 68. Abu Osman, NA; Gholizadeh, H; Eshraghi, A; Abas, WAW (2017). Clinical evaluation of a prosthetic suspension system: Looped silicone liner. Prosthetics and Orthotics International, 41(5), 476-483.
- 69. Al-Fakih, E; Arifin, N; Pirouzi, G; Adikan, FRM; Shasmin, HN; Abu Osman, NA (2017). Optical fiber Bragg grating-instrumented silicone liner for interface pressure measurement within prosthetic sockets of lower-limb amputees. Journal of Biomedical Optics, 22(8), 087001.
- 70. Ghazali, M. F., Abd Razak, N. A., Osman, N. A., & Gholizadeh, H. (2017, June). Effect of stump flexion contracture with and without prosthetic alignment intervention towards postural stability among transtibial prosthesis users. In IOP Conference Series: Materials Science and Engineering (Vol. 210, No. 1, p. 012002). IOP Publishing.
- 71. Hashim, NA; Abd Razak, NA; Gholizadeh, H; Abu Osman, NA (2017). Analysis of voluntary opening Ottobock Hook and Hosmer Hook for upper limb prosthetics: a preliminary study. Biomedical Engineering / Biomedizinische Technik, 62(4), 447 454.
- 72. Jasni, F; Hamzaid, NA; Syah, NEM; Chung, TY; Abu Osman, NA (2017). Analysis of Interrelationships among Voluntary and Prosthetic Leg Joint Parameters Using Cyclograms. Frontiers in Neuroscience, 11, 230.
- 73. Jusman, Y., Ng, S. C., Hasikin, K., Kurnia, R., Abu Osman, N. A., & Teoh, K. H. (2017). A system for detection of cervical precancerous in field emission scanning electron microscope images using texture features. Journal of Innovative Optical Health Sciences, 10(02), 1650045.
- 74. Khan, S. J., Khan, S. S., Usman, J., Mokhtar, A. H., & Osman, N. A. (2016, September). A Pilot Study on Physical Performance Measures: What is Better for Knee Osteoarthritis Patients, Orthosis or Gait Modifications?. In International Conference on Movement, Health and Exercise (pp. 163-167). Springer, Singapore.
- 75. Mirjalili, F; Mohammadi, H; Azimi, M; Hafezi, M; Abu Osman, NA (2017). Synthesis and characterization of beta-TCP/CNT nanocomposite: Morphology, microstructure and in vitro bioactivity. Ceramics International, 43(10), 7573-7580.
- 76. Mok, CF; Ching, YC; Muhamad, F; Abu Osman, NA; Singh, R (2017). Poly(vinyl alcohol)--chitin composites reinforced by oil palm empty fruit bunch fiber-derived nanocellulose. International Journal of Polymer Analysis and Characterization, 22(4), 294-304.
- 77. Pirouzi, G; Abu Osman, NA; Ali, S; Makinejad, MD (2017). A new prosthetic alignment device to read and record prosthesis alignment data. Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine, 231(12), 1127-1132.
- 78. Tripathy, A., Pramanik, S., Manna, A., Radzi, Z., & Abu Osman, N. A. (2017). Dielectric and AC conductivity studies of porous armalcolite nanocomposite-based novel humidity sensor. Journal of The American Ceramic Society, 100(11), 5131-5140.



- 80. Al-Fakih, E. A., Abu Osman, N. A., Adikan, F. R. M., Eshraghi, A., Jahanshahi, P. 2016. Development and Validation of Fiber Bragg Grating Sensing Pad for Interface Pressure Measurements Within Prosthetic Sockets. Ieee Sensors Journal. (Tier 2, Impact Factor = 1.889)
- 81. Al-Fakih, E. A., Abu Osman, N. A., Adikan, F. R. M., Eshraghi, A., & Jahanshahi, P. (2016). Development and Validation of Fiber Bragg Grating Sensing Pad for Interface Pressure Measurements Within Prosthetic Sockets. IEEE Sensors Journal 16(4), 965-974.
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## RESEARCH INTEREST

- Biomechanics
- Motion Analysis
- Rehabilitation Engineering

#### RESEARCH PROJECT

National

- 2011 2015, High Impact Research (HIR)
  Biomechanical System for Hard Tissues of Normal and Disable Subjects (Principal Investigator(PI))
- 2012 2015, High Impact Research (HIR)
  Novel Tissue Expander to Facilitate Maxillary Expansion in Treating Crossbite and Transverse Maxillary Hypoplasia (Consultant)

3. **2008** 



Design and Development of Automated Anal Retractor for Anorectal Surgery

4. **2008** 

Development of Engineering Automated Rapid Maxillary Expander for Dento-Facial Applications

5. **2008** 

Development of Prosthetic Hand for Brain-Computer Interface (BCI) System

6. **2008** 

Development of Pylon Materials in Transtibial Prosthesis

7. **2008** 

Investigation of the Expansion pattern in ovoid and tapered shaped maxilla using Rapid maxillary Expander

8 **2008** 

Multimodal Analysis of ECG and Gait Signals for Cardiolocomotor Assessment

9. 2008

Study on the External Finger Fixator to Correct Flexion Deformity

10. **2008** 

The stump-socket interface stresses - Developing and manufacturing of the trans-tibial socket

11. **2008** 

Understanding the influence of silicone and gel liners on stump-socket interface stresses - developing the socket of the future

12. **2007 - 2008, IPPP** 

Investigation of the expansion pattern in ovoid and tapered shaped maxilla using rapid maxillary expander. (Consultant)

# **CONSULTANCY PROJECT**

- Penemuduga Bagi Kemasukan Ke Program Pengajian Ijazah Dasar & Asasi Sesi 2014/2015, UNIVERSITY OF MALAYA
  01 Oct 2014 01 Oct 2015 (National)
- Clinical Evaluation of a Prosthetic Suspension System: Looped Silicone Liner, OSSUR, Iceland
  01 Oct 2014 01 Oct 2015 (International)
- Development of a Standard Donning and Doffing Questionnaire for Lower Limb Prosthesis a Pilot Study, OSSUR, Iceland
  01 Oct 2014 01 Oct 2015 (International)
- Penasihat Perancangan UM-university-industry Mri Research Collaboration Inclusive of Research Facility and 3t Mri Machine,
  Fakulti Perubatan, UM, PUSAT PERUBATAN UM

01 Oct 2014 - 01 Oct 2014 (National)

Majlis ICT Universiti Malaya, University of Malaya

01 Oct 2014 - 01 Oct 2014 (National)

Pemeriksa Luar Tesis, UNIVERSITI TEKNOLOGI MALAYSIA

01 Oct 2013 - 01 Oct 2014 (National)

- Seal-in and Locking Liners On Gait, Pressure and Pistoning Movement in Trans-tibial Amputees., OSSUR, Iceland 01 Oct 2010 01 Oct 2012 (International)
- External Examiner, Phd, Wang Chao, The Hong Kong Polytechnic University
  01 Oct 2012 01 Oct 2012 (International)

# **PATENT/ IPR**

• Prosthetic Anti-movement Valve (PAV)

Patent (National)

Measurement tool box for assessing human postural abnormalities

Patent (National)

• Smart Mini Implant Positioner and radiograph Holder

Patent (National)

• An ambulatory function monitoring system

Patent (National)

Finger Fixator

Patent (International)

• Pylon

Patent

• Automatic Maxillary Expander

Patent

• Dynamic Postural Garment Orthosis

PATENT

AUTOMATED MAXILLARY EXPANDER



#### • AN AMBULATORY FUNCTION MONITORING SYSTEM

**PATENT** 

### • Dynamic Postural Garment Orthosis

Patent (National)

# • An Anti-Displacement Prothetic Valve

**PATENT** 

#### • Stance control orthosis

**PATENT** 

### • Magnetic Suspension System For Lower And Upper Limb Prostheses

**PATENT** 

### • A Limb Prosthesis Supension System

Patent (National)

# • A Magnetic Coupling Device Of A Limb Prosthesis

Patent (National)

# • Liner for Prosthetic Limb

Patent (National)

# • Device for measuring head forward

Patent (National)

### • Uneven shoulders or hips

Patent (National)

### • Magnetic Adaptor to Lower Limb Prosthesis

Patent (National)

# • Light Distometer

Patent (National)

