# Dr. Mohd Hasnun Arif Bin Hassan

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Google Scholar : P0VkEBsAAAAJ

## Biography

Hasnun Arif earned his first degree in **Mechanical Engineering** from the **University of Applied Sciences Bingen, Germany** in 2010. During the final year of his undergraduate study, he was offered a scholarship by Universiti Malaysia Pahang (UMP) to pursue a **Master's degree in Mechanical Engineering** at the **University of Malaya** in Kuala Lumpur, which he graduated with distinction in 2012. After that, he embarked on his **PhD** journey at **UMP** where he studied about the head injury sustained by soccer players due to heading maneouvre. He completed his PhD study in 2016, then continue to serve UMP as a senior lecturer.

His research interests include *finite element modelling of the interaction between human and sports equipment*, *instrumentation of sports equipment*, and *injury prevention particularly with regards to sports and traffic accidents*. His work aims to apply engineering principles in sports not only to enhance the performance of an athlete, but also to prevent injuries.

Besides research work, Hasnun also involves in managing journals, namely the Movement, Health and Exercise (MoHE Journal) under the Ministry of Education of Malaysia, where he now serves as a Section Editor. He is also the Founding Editor-in-Chief of Mekatronika, a UMP mechatronics journal, and also currently serves as one of the coordinators of Open Journal System (OJS) in UMP. He considers himself a computer geek who enjoys graphic design and website development. Hasnun also loves music and plays guitar, bass and/or drum for a band at the faculty, known as Suave.

## Education Background

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|---|---|
| 2012 – 2016 | Doctor of Philosophy<br>*Faculty of Manufacturing Engineering, Universiti Malaysia Pahang*<br>Passed without correction (Scale 1) |
| 2010 – 2012 | M.Eng. in Mechanical Engineering<br>*Faculty of Engineering, Universiti Malaya*<br>CGPA: 3.84 (with Distinction) |
| 2005 – 2010 | Diplom Ingenieur in Mechanical Engineering<br>*University of Applied Sciences Bingen, Germany*<br>Notendurchschnitt: 2,1 (equivalent to Second-class Upper) |

## Ph.D. Thesis

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|---|---|
| Title | Modelling and Analysis of Soccer Heading and Protective Headgear to Understand and Prevent Mild Traumatic Brain Injury |
| Description | Analytical modelling, finite element analysis and experimental quantification of linear and angular head acceleration due to soccer ball heading in addition to the analysis of protective headgear for soccer players. |
| Supervisor | Prof. Dr. Zahari Taha |

## Career/Academic Appointments

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|---|---|
| 2019 – present | Senior Lecturer<br>*Faculty of Mechanical & Automotive Engineering Technology, Universiti Malaysia Pahang* |
| 2016 – 2019 | Senior Lecturer<br>*Faculty of Manufacturing Engineering, Universiti Malaysia Pahang* |
| 2016 | Tutor<br>*Faculty of Mechanical Engineering, Universiti Malaysia Pahang* |

## Administrative Positions

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|---|---|
| 2019 – present | Deputy Dean (Academic & Student Affairs)<br>*Faculty of Mechanical & Automotive Engineering Technology, Universiti Malaysia Pahang* |
| 2019 | Head of Programme (Automotive)<br>*Faculty of Mechanical & Manufacturing Engineering, Universiti Malaysia Pahang* |
| 2018 – 2019 | Head of Programme (Master of Industrial Engineering)<br>*Faculty of Mechanical Engineering, Universiti Malaysia Pahang* |

## Courses Taught

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| BFF1123 | Dynamics |
| BHM2103 | Dynamics |
| BFM3002 | Computer Simulation |
| BHA1133 | Dynamics |
| DMM2633 | Manufacturing Technology |

## Professional Affiliation

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|---|---|
| Board of Engineers Malaysia (BEM) | Graduate Engineer (*since 24/05/2011*) |
| International Sports Engineering Association (ISEA) | Full Member (*since 12/04/2018*) |

## Research Interests

Sports Engineering and Technology, Finite Element Analysis, Head Impact Protection, Sports Injury Protection, Instrumentation of Sports Equipment, Road Safety, Applied Machine Learning.

## Postgraduate Supervision

| Level | Name | Title | Status | Role |
|---|---|---|---|---|
| PhD | Yusof Hashim | The Potential Influence Of Organizational Ergonomic Risks Factors On Musculoskeletal Disorders And Driving Fatigue Related Near Miss Accidents | Active | Main Supervisor |
| PhD | Nurul Qastalani Radzuan | Prediction of Road Fatalities in Malaysia using Machine Learning | Active | Main Supervisor |
| MSc | Tan Fu Yang | Development and Analysis of Passive and Active Blind Spot Detection System | Active | Main Supervisor |
| MSc | Suraidah Sufring | Three-dimensional Finite Element Modelling of Machining Processes | Active | Co-supervisor |
| MSc | Ismail Ali Abdul Aziz | Development of Test Equipment to Study Tooth Bending Strength of Helical Gears in Automotive Transmission | Active | Co-supervisor |

## Research Grants (Principal Investigator)

| Title | Type of Grant | Amount | Status |
|---|---|---|---|
| Prediction of Road Traffic Accidents using Machine Learning | International Grant (ASEAN NCAP) | RM 26,000 | Active |
| Field of View Measurement of Side Blind Spot Mirror | International Grant (ASEAN NCAP) | RM 10,000 | Active |
| Badminton Agility Training Device | UMP - Community Technology Solution Platform | RM 20,000 | Active |
| Experimental and Computational Analysis of Motorcycle Helmet | UMP Internal Grant | RM 26,000 | Active |
| Design of Protective Headgear for Soccer Players through Experimental and Computational Analysis | UMP Internal Grant | RM 23,300 | Finished |
| Experimental and Computational Analysis of Head Impacts in Sports | UMP Seed Money | RM 5,500 | Finished |

## Journal Editor

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|---|---|
| Mekatronika (UMP Press) | *Founding Chief Editor* |
| Malaysian Movement, Health & Exercise Journal (Ministry of Education) | *Section Editor* |
| Journal of Society of Automotive Engineers Malaysia (SAE Malaysia) | *Editor* |

## Journal Reviewer

Frontiers in Human Neuroscience (*Frontiers*)
*ISSN: 1662-5161, ISI IF: 2.870*

International Journal of Performance Analysis in Sport (*Taylors and Francis*)
*ISSN: 2474-8668, ISI IF: 1.325*

Proc. of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine (*SAGE*)
*ISSN: 0954-4119, ISI IF: 1.317*

Proc. of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology (*SAGE*),
*ISSN: 1754-3371, ISI IF: 0.721*

International Journal of Automotive and Mechanical Engineering (*UMP Press*),
*ISSN: 2229-8649, Scopus SJR: 0.249*

Journal of Engineering Science & Technology (*Taylor's University*),
*ISSN: 1823-4690, Scopus SJR: 0.232*

Journal of Advanced Manufacturing Technology (*Penerbit UTeM*)
*ISSN: 1985-3157, Scopus*

## Keynote/Invited Talk

Oct 2, 2019 **Machine Learning in Sports**
*Keynote Speaker*
Movement, Health & Exercise 2019, Kuching, Malaysia

Dec 5, 2017 **Finite Element Analysis in Sports**
*Invited Speaker*
Movement, Health & Exercise 2017, Johor Bahru, Malaysia

May 25, 2017 **Modelling and Simulation in Sports: A case study of soccer heading**
*ISN Lecture Series 5/2017*
National Sports Institute of Malaysia, Bukit Jalil, Kuala Lumpur

May 24, 2017 **Engineering Sports: Modelling and Simulation**
*Guest Lecture*
Fakultas Teknik, Universitas Syiah Kuala, Banda Aceh, Indonesia

Oct 17, 2014 **Engineering Sports towards Injury Prevention.**
*Seminar Keselamatan dan Kesihatan Dalam Sukan 2014*
Department of Occupational Safety & Health Pahang, Kuantan, Malaysia

Dec 4, 2013 **Sports and Engineering: Towards improving the athlete's performance.**
*Seminar Teknologi Sukan 2013*
Universiti Teknikal Malaysia Melaka (UTeM), Malacca, Malaysia

## Journal Publications

[1] Musa, R. M., Abdul Majeed, A. P. P., Abdullah, M. R., Nasir, A. F. A. B., **Hassan, M. H. A.**, & Razman, M. A. M. (2019). Technical and tactical performance indicators discriminating winning and losing team in elite Asian beach soccer tournament. **PLoS ONE**. https://doi.org/10.1371/journal.pone.0219138. (*ISI IF: 2.776*)

[2] Taha, Z., & **Hassan, M. H. A.** (2017). A reaction-force-validated soccer ball finite element model. **Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology**, 231(1), 43–49. https://doi.org/10.1177/1754337115626636. (*ISI IF: 0.721*)

[3] Taha, Z., **Hassan, M. H. A.**, & Hasanuddin, I. (2015). Analytical modelling of soccer heading. **Sadhana**, 40(5), 1567–1578. https://doi.org/10.1007/s12046-015-0383-5. (*ISI IF: 0.769*)

[4] Ahmad, Z., Taha, Z., **Hassan, H. A.**, Hisham, M. A., Johari, N. H., & Kadirgama, K. (2014). Biomechanics measurements in archery. **Journal of Mechanical Engineering and Sciences**. https://doi.org/10.15282/jmes.6.2014.4.0074. (*Scopus SJR: 0.361*)

## Conference Proceedings

[1] Taha, Z., **Hassan, M. H. A.**, & Aris, M. A. (2013). The efficacy of impact-absorbing materials during collision with a soccer ball. In Applied Mechanics and Materials (Vol. 440). https://doi.org/10.4028/www.scientific.net/AMM.440.363

[2] Taha, Z., Aris, M. A., Ahmad, Z., **Hassan, M. H. A.**, & Sahim, N. N. (2013). A low cost 3D foot scanner for custom-made sports shoes. In Applied Mechanics and Materials (Vol. 440). https://doi.org/10.4028/www.scientific.net/AMM.440.369

[3] Taha, Z., **Hassan, M. H. A.**, Aris, M. A., & Anuar, Z. (2013). Predicting brain acceleration during heading of soccer ball. IOP Conference Series: Materials Science and Engineering, 50(1). https://doi.org/10.1088/1757-899X/50/1/012023

[4] Taha, Z., Aris, M. A., & **Hassan, M. H. A**. (2013). The influence of football boot construction on ball velocity and deformation. IOP Conference Series: Materials Science and Engineering, 50(1). https://doi.org/10.1088/1757-899X/50/1/012028

[5] Taha, Z., **Hassan, M. H. A.,** Hasanuddin, I., Aris, M. A., & Abdul Majeed, A. P. P. (2014). Impact-absorbing materials in reducing brain vibration caused by ball-to-head impact in soccer. Procedia Engineering, 72, 515–520. https://doi.org/10.1016/j.proeng.2014.06.088

[6] **Hassan, M. H. A**., & Taha, Z. (2015). Finite element analysis of soccer heading. Procedia Engineering, 112, 46–51. https://doi.org/10.1016/j.proeng.2015.07.174

[7] Taha, Z., & **Hassan, M. H. A**. (2016). Parametric Analysis of the Influence of Elastomeric Foam on the Head Response during Soccer Heading Manoeuvre. Procedia Engineering, 147, 139–144. https://doi.org/10.1016/j.proeng.2016.06.203

[8] Aziz, I. A. A., Idris, D. M. N. D., **Hassan, M. H. A**., Basrawi, M. F., Yusop, A. F., & Ghazali, W. M. (2017). Finite element analysis on effects of rim and web thicknesses on root stress of thin-rimmed spur gear with asymmetric web arrangement. AIP Conference Proceedings, 1901. https://doi.org/10.1063/1.5010499

[9] Aziz, I. A. B. A., Idris, D. M. N. B. D., **Hassan, M. H. A**. B., & Basrawi, M. F. B. (2018). Finite Element Analysis of Impact Energy on Spur Gear. MATEC Web of Conferences, 225. https://doi.org/10.1051/matecconf/201822506011

[10] Taha, Z., Musa, R. M., Abdul Majeed, A. P. P., Abdullah, M. R., Abdullah, M. A., **Hassan, M. H. A**., & Khalil, Z. (2018). The employment of Support Vector Machine to classify high and low performance archers based on bio-physiological variables. IOP Conference Series: Materials Science and Engineering, 342(1). https://doi.org/10.1088/1757-899X/342/1/012020

[11] Radzuan, N. Q., **Hassan, M. H. A**., Abdul Majeed, A. P. P., Musa, R. M., Mohd Razman, M. A., & Abu Kassim, K. A. (2020). Predicting serious injuries due to road traffic accidents in Malaysia by means of artificial neural network. In Lecture Notes in Mechanical Engineering. https://doi.org/10.1007/978-981-13-9539-0_8