

Bilal Youssef - Beirut Arab University, Faculty of Engineering

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Bilal.youssef@bau.edu.lb ; bilalyoussef.by@gmail.com

Sex Male | Date of birth 14/04/1979 | Nationality Lebanese, French

Area of interest: Control Systems, Diagnostic, Automotive Engineering, Mechatronics Machine Learning, Instrumentation, Renewable Energy

EDUCATION AND TRAINING

2002 - 2005 **Ph.D. Automatic Control**

Grenoble Institute of Technology, INPG - France

2001- 2002 **Research Master. Automatic Control**

Grenoble Institute of Technology, INPG - France

1996 - 2001 **Electrical & Electronics Engineering Degree**

Faculty of Engineering, Lebanese University

2001 **Final Year Project**

Faculty of Engineering, Lebanese University

Faculty of Engineering, EPFL, Switzerland

WORK EXPERIENCE

2015 - 2026 **TEACHING**

Beirut Arab University, Faculty of Engineering - Tripoli

Courses: Control systems, Dynamic Systems Modelling and Analysis, Power Electronics, Instrumentation, Automation, Special Machines, Introduction to Renewable Energy, Wind Energy

2007 - 2014 **RESEARCH & DEVELOPMENT**

IFP Energies nouvelles, Department of Control Systems and Signals - Rueil Malmaison / Lyon

Automotive Applications: Control, Diagnostic and Estimation

2006 **POSTDOC.**

IFP Energies nouvelles, Department of Control Systems and Signals - Rueil Malmaison

Turbochargers Control - Torque Estimation

PERSONAL SKILLS

Languages Arabic, French, English

Software Matlab, Simulink, Office Automation

Leisure Football, Tennis, Ski

LIST OF PUBLICATIONS

Patents

- Method for diagnosing a particle filter by means of a soot capturing device.
  Inventors: Bilal Youssef, Yann Creff
  United States Patent, No. 9,556,780. 31 Jan. 2017.
- Method of testing engines based on graphic signatures.
  Inventors: Bilal Youssef, Gilles Corde
  European Patent, No. EP 2 212 537 B1, 2012.
- Method for controlling a turbocharger using a physical model of the turbocharger speed.
  Inventors: Bilal Youssef, Philippe Moulin
  United States Patent, No. 8,082,091, Dec 2011 & European Patent, No. EP 2 042 712 B, 2012.
- Procédé de contrôle d'un moteur à combustion thermique équipé de deux boucles de recirculation de gaz d'échappement.
  Inventors: Olivier Hayat, Christophe Jabeur, Guenael Le Soliec, Bilal Youssef
  French Patent, No. FR 2 956 160 B1, 2012
- Fast prototyping tools for diagnosis algorithms for nonlinear systems
  Inventors: Mazen Alamir, Bilal Youssef, Pascal Bellemain
  French APP, IDDN.FR.001.300032, June, 2006.

Publications

- Bilal Youssef, Heba El-Halabi, Mahmoud Elkhodr and Abdallah Al-Sabbagh. Machine Learning for On-Board Diagnostics of Diesel Particulate Filters: A Comparative Classifier Benchmark and Feature Sufficiency Analysis. Submitted to IET Intelligent Transport Systems. 17/6/2026.
- Bilal Youssef. A Robust Adaptive Strategy for Diesel Particulate Filter Health Monitoring Using Soot Sensor Data. Vehicles 2025, 7, 39.
- B. Youssef. Innovative Model-Free On-Board Diagnostics for Diesel Particulate Filter. SAE International Journal of Engines 17, no. 03-17-03-0023 (2023).
- B. Youssef. Trapped mass estimation in automotive diesel engines based on in-cylinder pressure signal projection. *International Journal of Adaptive Control and Signal Processing*, 2020, *34*(12), 1751-1767.
- O. Brunel, F. Duault, B. Youssef, J. Lavy and Y. Creff. Smart Soot Sensor for Particulate Filter OBD. In Advanced Microsystems for Automotive Applications 2013 (pp. 351-361). Springer International Publishing.
- O. Brunel, F. Duault, J. Lavy, Y. Creff and B. Youssef. Smart Soot Sensor for Particulate Filter OBD. SAE Int. J. Passeng. Cars – Electron. Electr. Syst. 6(1):307-327, 2013, doi:10.4271/2013-01-1334.
- B. Youssef, Y. Creff and N. Petit. Model Based Control of Alumina Support Synthesis Process. Computers and Chemical Engineering 36(2012) 255-264.
- B. Youssef. A graphical signature generation tool for diagnosis and parametric estimation of industrial systems: Application to induction motors. Book Chapter - Fault Diagnosis in Robotic and Industrial Systems, ISBN, 978-0980733099, 2012.
- A. Albrecht, O. Grondin, J.C. Schmitt, L.M Malbec, B. Youssef, G.Font, P. Gautier and P. Moulin.

Simulation Support for Control Issues in the Context of Modern Diesel Air Path Systems. Oil & Gas Science and Technology Journal, Vol. 64 (2009), No.3, pp.381-405.

- J. Chauvin, P. Moulin, B. Youssef and O. Grondin. Global Air Path Control of a Turbocharged Diesel HCCI Engine. Oil & Gas Science and Technology Journal, Vol. 63 (2008), No.4, pp.553-561.

Conferences

- Elkhodr, Mahmoud, Abdallah Al-Sabbagh, and Bilal Youssef. 2026. "Physics-Guided Graphical Signatures and Machine Learning for In-Cylinder Pressure Sensor Health Monitoring" *Symmetry* 18, no. 10: 1688.
- B. Youssef. A novel approach for diesel particulate filter diagnostic using resistive sensor. IEEE *International Conference on Advanced Systems and Electric Technologies (IC_ASET)* March, 2018.
- O. Brunel, F. Duault, B. Youssef, J. Lavy and Y. Creff. Smart Soot Sensor for Particulate Filter OBD. AMAA conference, June 17-18, 2013, Berlin, Germany.
- O. Brunel, F. Duault, J. Lavy, Y. Creff and B. Youssef. Smart Soot Sensor for Particulate Filter OBD. SAE 2013 World Congress, April 16-18, 2013 Michigan, USA.
- B. Youssef, J. Malaize and W. Di-b. Flux estimation of permanent magnet synchronous motors based on a graphical signature generation tool. IEEE International Conference on Industrial Technology, March 19 -21, 2012, Athens, Greece.
- B. Youssef , F. Guillemin, G. Le Solliec and G. Corde. In cylinder trapped mass estimation in diesel engines using cylinder pressure measurements. IEEE Multi-Conference on Systems and Control, September 28 -31, 2011, Denver, USA.
- B. Youssef. Diagnosis and Parametric Estimation of Induction motors based on Graphical Signature Tool. IEEE International Symposium on Industrial Electronics (ISIE), July 4 -7, 2010, Bari, Italy.
- B. Youssef, G. Le Solliec, G. Corde, O. Hayat, C. Jabeur and P.O. Calendini. Low Pressure EGR Control for a Turbocharged Diesel HCCI Engine. IEEE Multi-Conference on Systems and Control (MSC-CCA) , July 8 -11, 2009, Saint Petersburg, Russia.
- B. Youssef, and G. Corde. Individual Cylinder IMEP Estimation Based on Two Dimensional Graphical Signature Using Crankshaft Angular Velocity Measurements. IEEE Multi-Conference on Systems and Control (MSC-CCA) , July 8 -11, 2009, Saint Petersburg, Russia.
- P. Moulin, J. Chauvin and B. Youssef. Modelling and Control of the Air System of a Turbocharged Gasoline Engine. IFAC World Congress, July 6-11, 2008, Seoul, Korea.
- B. Youssef. On Line Parametric Faults Detection in Induction Motors Based on a Graphical Signature Tool. Conference of the IEEE Industrial Electronics Society IECON, November 5-8, 2007, Taipei, Taiwan.
- B. Youssef, P. Moulin and O. Grondin. Model Based Control of Turbochargers: Application to a Diesel HCCI Engine. IEEE Multi-Conference on Systems and Control (MSC-CCA), October 1-3, 2007, Suntec City, Singapore.
- B. Youssef. Diagnostic par signatures graphiques des systèmes non linéaires: Détection et localisation des défauts multiples. Conférence Internationale Francophone d'Automatique, CIFA 2006, Bordeaux, France.
- B. Youssef, M. Alamir and Fadi Ibrahim. Diagnosis and on-line parametric estimation of simulated moving bed. IEEE Conference on Decision and control CDC and European Control Conference ECC, December 12-15, 2005 , Seville, Spain.
- B. Youssef and M. Alamir. Diagnosis and on-line parametric estimation of automotive electronic throttle control system. IFAC World Congress, July 4-8, 2005, Praha, Czeh Republic.
- B. Youssef and M. Alamir. Generic signature generation tool for diagnosis and parametric estimation of multi-variable dynamical nonlinear systems. IEEE conference on Decision and Control, December 9-

12 2003, Hawaii, USA.