Curriculum Vitae

Reza Aghayan

UTSA – Department of Mathematics • San Antonio, TX 78249 • E-MAIL reza.aghayan@utsa.edu

Educational Data:

• Post Graduate Education:

✓ PhD in Mathematics and Computer science at Kingston University London, Faculty of SEC, London, UK, March 2010 – October 2013.

∗ Title of the PhD Thesis: "K-point Group-signatures in Curve Analysis".

✓ MSc in Pure Mathematics at Institute for Advanced Studies in Basic Sciences, Zanjan, IRAN, 2001.

∗ Title of Master Thesis: "Symplectic Geometry and Foundations of Mechanics".

• Undergraduate Education:

✓ BSc in Pure Mathematics at Sharif University of Technology, Tehran, IRAN, 1998.

∗ Title of Bachelor Project: "Symplectic Manifolds".

Professional Experience:

✓ University faculty, The University of Texas at San Antonio, Spring 2016 –.

✓ Visiting Researcher, The University of Texas at San Antonio, September 2015 – August 2016.

✓ Assistant Professor in Mathematics and Computer Science, Azad University, 2013 – August 2015,

✓ Faculty Instructor, Azad University, 2001 – 2013.

Publications:

- **Reza Aghayan**, J. Dehmeshki and T. Ellis, "Planar Discrete Signature Theory Applied to Object Recognition", Journal of Mathematical Imaging and Vision, vol. 48, issue 3, pp. 583-605, 2014.
- **Reza Aghayan**, "Orientation-invariant Numerically Invariant Joint Signatures in Curve Analysis", International Journal of Computer Mathematics, vol 3, Issue 1, pp. 13-30, 2018.
- **Reza Aghayan**, "I. GM-sets Applied to Lie Theory", Afrika Matematika, vol. 28, issue 5-6, pp. 929-943, 2017.
- **Reza Aghayan**, "II. GM-manifolds and Unique Structure", Afrika Matematika, vol. 26, issue 1-2, pp. 225-237, 2015.
- M. Nadjafikhah and **Reza Aghayan**, "Geometry of Distributions and F-Gordon equation", Journal of Mathematical Sciences, 6:49, 2012.
- **Reza Aghayan**, "G-sets and Applications in Lie theory", 'The Online Journal on Mathematics and Statistics', vol. 2, no. 2, pp. 26-29, 2011.
- **Reza Aghayan**, "Generating Visual Invariants Applied to Curve Analysis", submitted, July 2018.
- **Reza Aghayan**, "A new Approach to the Invariant Recognition of Visual Objects", submitted, 2019.

Conference Papers:

- **R. Aghayan**, "Visual groups and Structural Equations", in: Proceedings of the 49th Annual Iranian Mathematics Conference - Geometry Section, Tehran, IRAN, August 23-26, 2018, pp. 21-35.
- **R. Aghayan**, "Signature-inverse Theorem in Mesh Group-planes-The New Formulation", in: Proceedings of the 49th Annual Iranian Mathematics Conference - Computer Science Section, Tehran, IRAN, August 23-26, 2018, pp. 2310-2332.
- **R. Aghayan,** "More About Visual Geometries-Visual Structural Equations", in: 2018 SIAM Annual Meeting, Portland, Oregon, USA, July 9-13, 2018.
- **R. Aghayan,** "Biases in Numerically Invariant Joint Signatures", in: Proceedings of the ICCIS 2015, 17th International Conference on Computational Intelligence Systems, October 8-9, 2015, Chicago, USA.
- **R. Aghayan,** "Detailed Observation in Numerically Invariant Signatures", in: Proceedings of the ICCSM 2014, 16th International Conference on Computer Science and Mathematics, September 29-30, 2014, Los Angles, USA.

- **R. Aghayan**, T. Ellis and J. Dehmeshki, "Joint Invariants in Signature Theory Applied to Object Recognition", in Proceedings of the IPCV'12, 16th Int'l Conference on Image Processing, Computer Vision, and Pattern Recognition, July 16-19, 2012, Las Vegas, USA.
- **R. Aghayan**, J. Dehmeshki and T. Ellis, "G-conjugacy in Lie Groups Theory", in: The 5th Annual International Conference on Mathematics, Statistics & Mathematical Education, June 13-16, 2011, Athens, GREECE.
- **R. Aghayan** and M. Nadjafikhah, "Exterior Differential Systems", in: Proceedings of the 4th Biannual Conference on Geometry and Topology, Orumieh, IRAN, 2007.
- **R. Aghayan** and M. Nadjafikhah, "Exterior Differential Systems with Symmetry", in: Proceedings of the 38th Annual Iranian Mathematics Conference, Zanjan, IRAN, 2007.

Research Projects:

- **Reza Aghayan,** "Signature and Signature-inverse theorems in Mesh Group-planes", Funded by Azad University, Tehran, 2018.
- **Reza Aghayan,** "Orientation-invariant Joint signatures", Funded by Azad University, Tehran, IRAN, 2018.
- **Reza Aghayan,** "Modeling, Reconstruction and Identification of Objects within Human Body", Funded by Azad University, Tehran, IRAN, 2012.
- **Reza Aghayan,** "Exterior Differential Systems and its Applications in Computer Vision", Funded by Azad University, Tehran, IRAN, 2012.
- **Reza Aghayan** and M. Nadjafikhah, "Exterior Differential Systems with Symmetry", Funded by Azad University, Tehran, IRAN, 2007.
- **Reza Aghayan** and M. Nadjafikhah, "Elie Cartan's theory and its Applications in Differential Equations", Funded by Azad University, Tehran, IRAN, 2006.

Book:

- **Reza Aghayan**, "Ordinary Differential Equations; Lessons and Exam Questions for Undergraduate and Graduate Students", Modarresan Sharif Press, 645+xi pages, 2007 (18th Edition 2019).

Teaching Experience:

- I lecture at UTSA for a bunch of courses such as Linear Algebra, Calculus II, Calculus I, Calculus for Business, Calculus for Biosciences, Precalculus, Algebra with Calculus for Business - Texas, USA, 2016 –.
- Lecturing in a number of modules such as Research Methodology (for graduate students), Foundations of Mathematics, Foundations of Geometry, Math Analysis, Ordinary Differential Equations, Algebra, Linear Algebra, Probability and Statistics for Engineers, General Mathematics I, II, and III - Azad University, Tehran, IRAN, From 2001 to 2015.

Other Activities:

- I spent the period from February 12, 2012 to August 08, 2012 at the University of Minnesota as a Visiting Scholar and worked closely under the supervision of Professor Peter J. Olver at the School of Mathematics.
- I spent the period from August 06, 2010 to October 25, 2010 at Iran University of Science and Technology as a Visiting Scholar and worked closely under the supervision of Professor M. Nadjafikhah at the School of Mathematics.
- I attended to XI Edition of the Italian Summer School (Diffiety School), Santo Stefano del Sole, Avellino, ITALY, from July 17 to August 1, 2008. I got two diplomas for "Geometry of Finite Order Jet Spaces" and "Observability in Physics and Differential Calculus over Commutative Algebras" managed and taught by Professor Alexandre M. Vinogradov.
- I studied Cartan's equivalence method and its applications in ODE and PDE in DGDE (a research group) under the supervision of Professor M. Nadjafikhah at Iran University of Science and Technology, Tehran, IRAN, From 2005 to 2010.
- I delivered lectures on "Smooth manifolds and Observables" weekly at Department of Mathematics, Iran University of Science and Technology, Tehran, IRAN, 2008.
- I delivered a lecture on "Unique structure on G-equivariant manifolds and Applications", at the School of Mathematics, Iran University of Science and Technology, Tehran, IRAN, 2010.
- I delivered three lectures on "The Theory of k-point G-Signatures and Applications" at Department of Basic Sciences, Azad University Eslamshahr Branch, Tehran, IRAN, 2015.
- I acted as an External Examiner for three M.Sc. theses in Mathematics, 2014-15.
- I acted as an External Examiner for five M.Sc. theses in Computer Science, 2014-15.

Research References:

Professor Peter J. Olver (University of Minnesota, USA).

Professor Tim Ellis (Kingston University London, UK).

Professor Mir Abbas Jalali (ISA-Princeton University, USA).

Professor Mehdi Nadjafikhah (University of Science and Technology, IRAN)

Teaching References:

Professor Shair Ahmad (University of Texas at San Antonio, USA).

Professor Sandy Norman (University of Texas at San Antonio, USA).

Professor Said Fariabi (San Antonio College, USA).