

Roland Kunkli

Curriculum Vitæ

University of Debrecen

Faculty of Informatics

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Education

- 2015 **PhD in Computer Science**,
University of Debrecen, Hungary.
Thesis' title: Solutions to some geometrical problems of CAGD
Supervisor: Prof. Dr. Miklós Hoffmann
Classification: summa cum laude
- 2012 **Teacher of Informatics (MSc)**,
University of Debrecen, Hungary.
- 2008 **Teacher of Mathematics (MSc)**,
University of Debrecen, Hungary.
Teacher of Descriptive Geometry (MSc),
University of Debrecen, Hungary.

Research Interest

Curves and Surfaces in Geometric Modeling, Constructive and Descriptive Geometry, Information Visualization

Professional Employment

- 2015 – present **Assistant Professor**,
University of Debrecen, Faculty of Informatics, Department of Computer Graphics and Image Processing, Hungary.
- 2012 – 2015 **Assistant Lecturer**,
University of Debrecen, Faculty of Informatics, Department of Computer Graphics and Image Processing, Hungary.
- 2008 – 2012 **External teaching assistant**,
University of Debrecen, Faculty of Informatics, Department of Computer Graphics and Image Processing, Hungary.

Awards and Honors

- 2015 **János Kemény Award**,
John von Neumann Computer Society, Budapest, Hungary.

- 2014 **Science Communication Special Award**,
Science on Stage Festival 2014, Debrecen, Hungary.
(Joint work with Ildikó Papp)
- 2012 **Outstanding PhD Student Award**,
University of Debrecen, Faculty of Informatics, Hungary.
- 2010 **Student Publication of the Year**,
Centre of Arts, Humanities and Sciences, University of Debrecen, Hungary.
Excellent Talk Award,
The 9th Conference of PhD Students in Computer Science, Szeged, Hungary.
- 2009 **Microsoft Special Award**,
XXIX. National Conference of Scientific Students' Associations, Debrecen,
Hungary.

Scholarships

Teaching Mobility Scholarships

- June 2015 **Erasmus+ Teaching Mobility Grant**,
Universidad Politécnica de Valencia, Spain
Dr. Felipe Peñaranda-Foix,
Teaching seminars in the topic of virtual avatars.
- May 2014 **Campus Hungary Teaching Staff Short Term Mobility**,
Universitat Rovira i Virgili, Tarragona, Spain
Dr. Maria Ferré Bergadà,
Course harmonization related to scientific and information visualization.
- Sept. 2014 **Erasmus Teaching Mobility Grant**,
University of Oradea, Romania
Dr. Zmaranda Doina,
Teaching seminars in the topic of Computer Aided Geometric Design.

Predoctoral Scholarship

- 2013 **Ányos Jedlik Scholarship for PhD Candidates**,
Office of Public Administration and Justice, National Excellence Program,
Hungary, (Closing classification: excellent).

Other Scholarships

- 2013 **Recognition grant for young researchers**,
Universitas Foundation of the University of Debrecen, Hungary.
- 2007–2008 **Professional scholarship**,
University of Debrecen, Faculty of Informatics, Hungary.

Teaching Experience

University of Debrecen

Theoretical

- BSc Introduction to Computer Graphics
 - Elements of Computer Graphics
 - Computer Graphics
 - OpenGL
 - Multimedia (in English)
- MSc Advanced Computer Graphics
 - Geometrical Basics of Computer Geometry
 - Curve and Surface Modeling

Laboratory

- BSc Introduction to Computer Graphics (also in English)
 - Elements of Computer Graphics
 - Computer Graphics
 - OpenGL
 - Multimedia (also in English)
 - Programming Languages 1.
- MSc Geometric Modeling

Practical

- BSc Introduction to Descriptive Geometry
 - Descriptive Geometry 2.
 - Computational Data Processing
 - Data Structures and Algorithms
- MSc Curve and Surface Modeling
 - Geometrical Basics of Computer Geometry

Research Experience

- 2012–2015 **Future Internet Research Services and Technology (FIRST)**,
researcher, University of Debrecen, Faculty of Informatics, Hungary.
Multimodal Human-Computer Interaction
- 2012–present **Bionformatics Research Group**,
researcher, University of Debrecen, Faculty of Informatics, Hungary.
Visualizing Genomes, Big Data Visualization

- 2009 – present **GEMMA Research Group**,
researcher, Károly Eszterházy College, Institute of Mathematics and Computer Science, Eger, Hungary.
Curves and Surfaces in CAGD
- 2009 – 2010 **HuComTech project**,
developer, University of Debrecen, Humanities and Sciences, Hungary.
Multimodal Human-Computer Interaction

Thesis Supervising

- BSc István Csoba: Developing a 3D game engine based on modern technologies (in Hungarian), University of Debrecen, Hungary, 2015.
- Tibor Török: Interactive movements for a 3D face model in Android platform (in Hungarian), University of Debrecen, Hungary, 2015.
- Jácint Gyákon: Large data visualization based on H-trees (in Hungarian), University of Debrecen, Hungary, 2015.
- Roland Rácz: Body animations for a web based MPEG-4 virtual avatar (in Hungarian), University of Debrecen, Hungary, 2015.
- Richárd-Zsolt Buda, Gábor Boldizsár: Integration of a virtual talking avatar into a web application based on WebGL (in Hungarian), University of Debrecen, Hungary, 2014.
- Ákos Tóth: MPEG-4 standardized controlling for a reconstructed 3D face model (in Hungarian), University of Debrecen, Hungary, 2014.
- György Papp: Visualization of large three dimension matrices based on hyperbolic geometric models (in Hungarian), University of Debrecen, Hungary, 2014.
- Barbara Katócs: Preparation steps for integrating an open source TTS into a web based talking head system (in Hungarian), University of Debrecen, Hungary, 2013.
- MSc Gergely Simay: Game development in Unity (in Hungarian), University of Debrecen, Hungary, 2014.

Selected Talent Development Activity

- 2013 **Co-supervisor**, Kornél Bana and Kinga Kruppa, *KSpheres – An Efficient Algorithm for Joining Skinning Surfaces* (in Hungarian), XXXI. National Conference of Scientific Students' Associations (a Hungarian competition for talented students), Budapest, Hungary.
FIRST PLACE AWARD

Co-supervisor, Ferenc Nagy, *Method for Optimization of Camera Movement Path Based on Isoptic Curves* (in Hungarian), XXXI. National Conference of Scientific Students' Associations (a Hungarian competition for talented students), Budapest, Hungary.

FIRST PLACE AWARD

Professional Activities

Reviewing

Journal Annales Mathematicae et Informaticae

Computer Aided Geometric Design

Conference International Conference on Geometry and Graphics

IEEE International Conference on Cognitive Infocommunications

National Conference of Scientific Students' Associations, Hungary

Conference of Scientific Students' Associations, University of Debrecen, Faculty of Informatics, Hungary

Conference Organization

2014 **Secretary**,
9th International Conference on Applied Informatics, Eger, Hungary.

2014 **Member of the organizing committee**,
Informatics in Higher Education Conference, Debrecen, Hungary.

Popularizing Computer Graphics and 3D Modeling

Program leader

2016 Girls' Day, University of Debrecen, Debrecen, Hungary

2012–2015 Night of Researchers, University of Debrecen, Debrecen, Hungary

2014–2015 Campus Festival, Debrecen, Hungary

2014 Science on Stage, Debrecen, Hungary

2013 II. See Science Festival, Debrecen, Hungary

"Meet the Professors" Road Show, Hungary

Invited lecturer,

Science Café X., Debrecen, Hungary, *Computer generated characters in the world of multimedia*.

Interviewee,

Campus Radio, Debrecen, Hungary, 2013, *Virtual avatars*.

Klub Radio, Debrecen, 2013, *Virtual avatars*

Languages

Hungarian	Native
English	B2
German	A2

Professional Memberships

- 2015 – present Society of Hungarian Scientists and Scholars, Hungarian Academy of Sciences, Budapest, Hungary
The Debrecen Committee of the Hungarian Academy of Sciences, Working Committee, Debrecen, Hungary
- 2014 – present István Hatvani College Committee, University of Debrecen, Hungary
- 2013 – present Hungarian Society for Geometry and Graphics (HSGG) (founding member)
International Society for Geometry and Graphics (ISGG)
- 2012 – present John von Neumann Computer Society, Professional community: Computer Graphics and Geometry, The Hungarian Chapter of EUROGRAPHICS Association

Publications

Journal Papers

- [1] Bana, K., Kruppa, K., Kunkli, R. and Hoffmann, M.: KSpheres – an efficient algorithm for joining skinning surfaces. *Computer Aided Geometric Design*, **31**, pp. 499–509, 2014.
- [2] Nagy, F. and Kunkli, R.: Method for computing angle constrained isoptic curves for surfaces. *Annales Mathematicae et Informaticae* **42**, pp. 65–70, 2013.
- [3] Szabó, J. and Kunkli, R.: The Generalization of Szabó’s Theorem for Rectangular Cuboids and an Application. *Journal for Geometry and Graphics* **17** (2), pp. 213–222, 2013.
- [4] Kunkli, R., Papp, I. and Hoffmann, M.: Isoptics of Bézier curves. *Computer Aided Geometric Design*, **30**, pp. 78–84, 2013.
- [5] Kunkli, R.: Biarc analysis for skinning of circles. *Annales Mathematicae et Informaticae* **38**, pp. 87–93, 2011.
- [6] Kunkli, R. and Hoffmann, M.: Skinning of circles and spheres. *Computer Aided Geometric Design* **27**, pp. 611–621, 2010.
- [7] Kunkli, R.: Localization of touching points for interpolation of discrete circles. *Annales Mathematicae et Informaticae* **36**, pp. 103–110, 2009.

Conference Papers

- [1] Tóth, Á. and Kunkli, R.: Semi-automatic MPEG-4 standardization of 3D head models *In: Proceedings of the VIII. Hungarian Conference on Computer Graphics and Geometry*, edited by László Szirmay-Kalos and Gábor Renner, John von Neumann Computer Society, pp. 53–60, 2016.
- [2] Nagy, F., Kunkli, R. and Hoffmann, M.: Isoptics Camera orbit around convex meshes *In: Proceedings of the VIII. Hungarian Conference on Computer Graphics and Geometry*, edited by László Szirmay-Kalos and Gábor Renner, John von Neumann Computer Society, pp. 48–52, 2016.
- [3] Rácz, R., Tóth, Á., Papp, I. and Kunkli, R.: Full-body animations and new faces for a WebGL based MPEG-4 avatar *In: Proceedings of the 6th IEEE International Conference on Cognitive Infocommunications (DEMO paper)*, edited by Péter Baranyi, IEEE Hungary Section, Győr, p. 419, 2015.
- [4] Papp, I., Tomán, H., Kunkli, R. and Zichar, M.: Applied Informatics in Dental Education (in Hungarian) *In: Proceedings of the 28th Neumann Colloquium: Health Informatics on New Foundations*, edited by István Kósa and István Vassányi, John von Neumann Computer Society, Veszprém pp. 26–31, 2015.
- [5] Kruppa, K., Bana, K., Kunkli, R. and Hoffmann, M.: Creating connection between skinning surfaces *In: Proceedings of the VII. Hungarian Conference on Computer Graphics and Geometry*, edited by László Szirmay-Kalos and Gábor Renner, John von Neumann Computer Society, pp. 46–51, 2014.
- [6] Buda, R., Boldizsár, G., Tóth, Á., Szeghalmy, Sz., Tornai, R. and Kunkli, R.: Extended capabilities for a WebGL based talking head system (DEMO paper). *In: Proceedings of the 5th IEEE International Conference on Cognitive Infocommunications (DEMO paper)*, edited by Péter Baranyi, IEEE Hungary Section, Vietri sul Mare, p. 459, 2014.
- [7] Tornai, R., Papp, I. and Kunkli, R.: GLSL in Batch Image Processing (DEMO paper). *In: Proceedings of the 5th IEEE International Conference on Cognitive Infocommunications*, edited by Péter Baranyi, IEEE Hungary Section, Vietri sul Mare, pp. 567–568, 2014.
- [8] Lámfalusi, C., Girus, D., Kruppa, K., Tóth, J., Hajdúné Pocsai, E., Kunkli, R., Hajdu, A. and Bálint, B.L.: Extending the visualization capabilities of a genome browser. *In: Proceedings of the 4th IEEE International Conference on Cognitive Infocommunications*, edited by Péter Baranyi, IEEE Hungary Section, Budapest, pp. 419–422, 2013.
- [9] Lámfalusi, C., Girus, D., Kruppa, K., Tóth, J., Hajdúné Pocsai, E., Kunkli, R., Hajdu, A. and Bálint, B.L.: Adding a scalable visualization technique to the UCSC genome browser (DEMO paper). *In: Proceedings of the 4th IEEE International Conference on Cognitive Infocommunications*, edited by Péter Baranyi, IEEE Hungary Section, Budapest, pp. 943–944, 2013.

- [10] Katócs, B., Tóth, Á., Buda, R., Boldizsár, G., Török, T., Szeghalmy, Sz., Kunkli, R. and Fazekas, A.: New features for an MPEG-4 talking head (DEMO paper). *In: Proceedings of the 4th IEEE International Conference on Cognitive Infocommunications*, edited by Péter Baranyi, IEEE Hungary Section, Budapest, pp. 935–936, 2013.
- [11] Kunkli, R., Tornai, R. and Papp, I.: Controlling talking head using motion sensors of a wireless connected smart phone (DEMO paper). *In: Proceedings of the 3th IEEE International Conference on Cognitive Infocommunications*, edited by Péter Baranyi, IEEE Hungary Section, Košice, p. 295, 2013.
- [12] Kunkli, R. and Hoffmann, M.: Interpolation of sequences of circles and spheres (in Hungarian). *In: Proceedings of the VI. Hungarian Conference on Computer Graphics and Geometry*, edited by László Szirmay-Kalos and Gábor Renner, John von Neumann Computer Society, pp. 145–149, 2014.

Other Conference Talks

- [1] Kunkli, R.: A web based tool for creating skinning curves and surfaces using biarcs *Conference on Geometry: Theory and Applications (CGTA 2015)*, Schloss Weinberg Kefermarkt, Austria, June, 2015.
- [2] Tóth, Á., Buda, R-Zs., Boldizsár, G. and Kunkli, R.: Kinect based 3D human face reconstruction for MPEG-4 based animation. *The 9th International Conference on Applied Informatics (ICAI 2014)*, Eger, Hungary, January 2014.
- [3] Szabó, J. and Kunkli, R.: The generalization of Szabó's Theorem for rectangular cuboids with an example application. *17th Scientific-Professional Colloquium on Geometry and Graphics*, Rastoke, Croatia, September 2013.
- [4] Kunkli, R.: Skinning of Spheres using Biarcs. *Conference on Geometry: Theory and Applications (CGTA 2013)*, Ljubljana, Slovenia, June 2013.
- [5] Kunkli, R., Papp, I. and Hoffmann, M.: Iso-optics of Bézier curves. *1st International Conference on Applied Geometry and Graphics (GeoGra 2012)*, Budapest, Hungary, January 2012.
- [6] Kunkli, R., Papp, I. and Hoffmann, M.: Isoptics of free-form curves. *16th Scientific-Professional Colloquium on Geometry and Graphics*, Baška, Croatia, September 2012.
- [7] Kunkli, R. and Hoffmann, M.: Skinning of circles by biarcs. *Conference on Geometry Theory and Applications (CGTA 2011)*, Vorau, Ausztria, June 2011.
- [8] Kunkli, R. and Hoffmann, M.: Skinning of circles and spheres using Apollonius circles. *8th International Conference on Applied Informatics (ICAI 2010)*, Eger, Hungary, January 2010.
- [9] Kunkli, R.: Skinning of circles using biarcs. *The 7th Conference of PhD Students in Computer Science (CSCS 2010)*, Szeged, Hungary, June 2010.

- [10] Skinning of spheres. *2nd Croatian Conference on Geometry and Graphics (CCGG 2010)*, Šibenik, Croatia, September 2010.

Co-edited Proceedings

- [1] Proceedings of Informatics in Higher Education Conference 2014 (IF 2014) (in Hungarian), edited by Roland Kunkli, Ildikó Papp and Edéné Rutkovszky
- [2] Proceedings of the 9th International Conference on Applied Informatics (ICAI 2014), edited by Emőd Kovács, Gábor Kusper, Roland Kunkli and Tibor Tórnács