

## László A. Jeni

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[Google Scholar](#), [OSF](#), [LinkedIn](#)



### Research Interests

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I am broadly interested in computer vision and machine learning for computational behavior science, specifically in areas of modelling, analysis, and synthesis of human behavior using diverse sensors. I develop methods to model and analyze multiple, varied nonverbal modalities (face, head, gaze, body from video, and physiology from biosensors). My work is motivated by applications in the field of human health, computer graphics, and assistive computer vision.

### Education

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| 2008 - 2012 | The University of Tokyo (Japan)<br>Ph.D., Electrical Engineering and Information Systems<br>Thesis: "Study on Facial Expression Analysis based on 3D Deformable Model" |
| 2010 - 2011 | RIKEN Brain Science Institute (Japan)<br>Certificate in Neuroscience and Cognitive Neuroscience  |
| 1998 - 2004 | Eötvös Loránd University, Faculty of Informatics (Hungary)<br>M.Sc. in Computer Science<br>Thesis: "Artificial Intelligence Techniques used in the Game of Go"         |
| 1993 - 1998 | John von Neumann Secondary Vocational School for Computer Technology (Hungary)<br>Computer Programmer (1997)<br>Specialist in Geographical Information Systems (1998)  |

### Appointments and Working Experience

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| 2015 - current | Carnegie Mellon University (USA)<br>Project Scientist at the Robotics Institute<br>Working on dense, 3D metric reconstruction of deformable objects, 3D eye gaze estimation, and automatic multimodal behavior coding (face, head, gaze, and pose).                    |
| 2012 - 2015    | Carnegie Mellon University (USA)<br>Postdoctoral Researcher at the Robotics Institute<br>Working on 3D face alignment and automatic coding of facial expressions with Jeffrey F. Cohn and Takeo Kanade.  |
| 2011 - 2012    | Realeyes OU<br>Senior Computer Vision Specialist<br>Working on scaling-up face-alignment and face-analysis techniques.   |
| 2007 - 2012    | The University of Tokyo (Japan)<br>Research Assistant, Global Center of Excellence Program "Secure-Life Electronics", Department of Electrical Engineering<br>Working on real-time facial expression analysis and human-robot interaction in intelligent environments. |
| 2007 - 2009    | Triensis SRO (Slovakia) - startup<br>Managing Director<br>Developing and maintaining a multiplayer, online role-playing game. Leading and managing group of artist and content developers.   |

2006 - 2007	Eötvös Loránd University (Hungary) Junior Assistant Professor at the Department of Software Technology & Methodology Teaching Robotics, Multi-agent systems, Advanced 3D Computer Graphics and Managed DirectX/XNA
2005 - 2006	Eötvös Loránd University (Hungary) Lecturer at the Department of Media & Educational Technology Teaching 3D game programming, Real-time 3D graphics, Advanced Assembly programming
2003 - 2004	ArchiData Ltd. (Hungary) Software developer Developing the 3DClick architectural CAD software. DirectX API programming (texture mapping, shader programming), photo-rendering integration.

## Funding

### Active

- Principal-Investigator, "Protective Mask Sizing App.", Department of Defense/CFD Research Corporation (DoD SBIR), 9/27/2017 - 12/26/2019
- Principal-Investigator, "Social interaction analysis using multimodal affect analysis", Fujitsu Ltd., 9/15/2018 - 9/14/2020
- Co-Investigator (PI: Jeffrey Cohn, University of Pittsburgh), "Automatic Multimodal Affect Detection for Research and Clinical Use." National Institute of Mental Health (NIMH R01), 8/1/2017 - 4/30/2022
- Co-Investigator (PI: Wayne Goodman, Baylor Medical School), "Adaptive DBS in Non-Motor Neuropsychiatric Disorders: Regulating Limbic Circuit Imbalance." National Institutes of Health (NIH UH3), 9/30/2016 - 6/30/2022
- Co-Investigator (PI: Sameer Anil Sheth), "Deep Brain Stimulation for Depression Using Directional Current Steering and Individualized Network Targeting.", National Institutes of Mental Health (NIMH 1UH3), 10/1/2017 - 9/30/2022

### Past

- Co-Investigator (PI: Jeffrey Cohn, University of Pittsburgh), "Automated Facial Expression Analysis for Research and Clinical Use.", National Institute of Mental Health (NIMH R01), 4/1/2012 - 7/31/2017

## Professional Activities

- Area Chair, The 13<sup>th</sup> IEEE Conference on Automatic Face and Gesture Recognition (FG 2018). <http://fg2018.org/>
- Data Chair, Facial Expression Recognition and Analysis Challenge (FERA2017), <http://sspnet.eu/fera2017/>
- General Chair of 1st Workshop on 3D Face Alignment in the Wild (3DFAW) & Challenge (In conjunction with ECCV 2016, <http://mhug.disi.unitn.it/workshop/3dfaw/>)
- Founding member of the Section of Robotics, John von Neumann Computer Society, Hungary
- Editorial Board Member of the International Journal of Computer Vision and Signal Processing (IJCSP)
- Member of the NAIST International Collaborative Laboratory for Robotics Vision, Nara, Japan, (<http://rvlab.naist.jp/members.html>), 2014 -
- Member of the Student Activities Subcommittee at the IEEE Computational Intelligence Society, 2010 - 2012
- Served and continue to serve on various programme committees (CVPR, FG, ICIEV)

## Awards & Scholarships

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2017	Outstanding Reviewer (CVPR 2017, Honolulu, Hawaii)
2015	Best Paper Award (IEEE FG 2015, Ljubljana, Slovenia) Paper: "Dense 3D Face Alignment from 2D Videos in Real-Time"
2015	Outstanding Reviewer Award (IEEE FG 2015, Ljubljana, Slovenia)
2011	Session Best Paper Award (IEEE HSI 2011, Yokohama) Paper: "Using Conditional Random Fields to Validate Observations..."
2010 - 2011	RIKEN Brain Science Training Program (Trainee) By: RIKEN Institute, Japan
2010	Machine Learning Summer School Scholarship (Canberra, Australia)
2007 - 2011	Japanese government scholarship (Monbukagakusho) By: Ministry of Education, Culture, Sports, Science and Technology, Japan
2006 - 2007	Scholarship of the Eötvös Loránd University, predoctoral appointment
2005	OTDK National Student Research Competition, 1 <sup>st</sup> prize (Computer Graphics) By: Council of National Scientific Students' Associations Paper: "Real-time Dual-paraboloid Shadow Mapping"

## Teaching Experience

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<b>Lecturing</b>	<b>Eötvös Loránd University, Budapest, Hungary</b>
2007 Spring	Managed DirectX and XNA (ca. 25 graduate students)
2006F, 2007S	Multi-agent Systems (ca. 25 graduate students)
2006F, 2007S	Robotics (ca. 25 graduate students)
2006 Fall	Advanced 3D Computer Graphics (ca. 40 graduate students):
2005 Fall	3D Game Programming (ca. 30 graduate students):
2003-2006 S.	Advanced Assembly Programming (ca. 30 students):
2003-2006, S.	Real-time 3D Graphics (ca. 30 students):
2004-2006 S.	Fractal Geometry (ca. 20 students):
<b>MSc. Adviser</b>	<b>Carnegie Mellon University</b>
2017	Bhavan Jasani, CMU MSR (co-advised with Jeff Cohn and Katerina Fragkiadaki)
2017	Wanqiao Ding, CMU ECE (co-advised with Jeff Cohn)
	<b>Eötvös Loránd University, Budapest, Hungary</b>
2013	Tamás Nagy and Judit Sebők (co-advised with András Lőrincz for the National Scientific Conference of Students, Project title: "3D Constrained Local Model and its use in Facial Expression Recognition", the project won the 3 <sup>rd</sup> place)
2008	Milán Magdics (M.Sc. Thesis title: "Procedural Modelling in Computer Graphics")
2007	Péter Balázs (M.Sc. Thesis title: "Study on Distributed, Online Games")
<b>Undergrad Supervision</b>	<b>Eötvös Loránd University, Budapest, Hungary</b>
2008	Péter Surányi (B.Sc. Project title: "3D Graphical Engine for Rendering Exterior Scenes")
2007	Krisztián Bokros (B.Sc. Project title: "3D Simulator using UIQ and OpenGL ES")
2007	Gergely Klár (B.Sc. Project title: "Numerical Methods for Cloth Simulation")
2006	Endre Kolláth (B.Sc. Project title: "Generating and Rendering of Near-realistic 3D Trees")
2006	Péter Balázs (B.Sc. Project title: "Networked, 3D Space Simulation using Java3D")
<b>Visiting Scholars</b>	
2015	Sergey Tulyakov, visiting PhD student (University of Trento)

## Invited Talks

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- 2018 [I.10] **Multimodal Computational Behavior Understanding**  
The University of Tokyo (1 hour)  
Tokyo, Japan, 2018
- 2016 [I.9] **Automated 3D Face Tracking for Facial Behavior Analysis**  
Nara Institute of Science and Technology Seminar (1 hour)  
Nara, Japan, 2016
- 2015 [I.8] **Automated Expression and Gaze Analysis**  
Realeyes Ltd., colloquium (1 hour)  
Budapest, Hungary, 2015
- 2015 [I.7] **Large-Scale Facial Behavior Understanding**  
RIKEN Advanced Institute for Computational Science (AICS), colloquium (1 hour)  
Tokyo, Japan, 2015
- 2014 [I.6] **Automated 3D Face Tracking for Facial Behavior Analysis**  
Chuo University, Faculty of Science and Engineering Seminar (1.5 hour)  
Tokyo, Japan, 2015
- 2014 [I.5] **Automatic Coding of Facial Expressions using Dense 3D Deformable Models**  
Apple Inc., colloquium (1 hour)  
Cupertino, CA, USA, 2014
- 2011 [I.4] **Affective Computing in Intelligent Environments**  
Eötvös Loránd University, NJSZT Robotics Seminar (1 hour)  
Budapest, Hungary, 2011.
- 2010 [I.3] **Safe Robot Controlling System using the iSpace Environment**  
Seoul National University, Seminar on Electrical Engineering,  
Seoul, Korea, 2010.
- 2010 [I.2] **Cognitive Robotics and Emotion Recognition in iSpace Environments**  
Eötvös Loránd University, John von Neumann Computer Society (Section of Robotics)  
Seminar (1 hour)  
Budapest, Hungary, 2010.
- 2009 [I.1] **Cognitive Robotics in the Intelligent Space**  
University of Pisa, Centro E. Piaggio (1 hour)  
Italy, Pisa, 2009.

## Departmental Talks

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- 2017 [D.4] **Challenges Facing Computational Face**  
Carnegie Mellon University, Vision and Autonomous Systems Center Seminar (1 hour)  
Pittsburgh, PA, USA, 2017
- 2015 [D.3] **Automated 3D Gaze Estimation and Expression Detection**  
Carnegie Mellon University, People Image Analysis Workshop (30 mins)  
Pittsburgh, PA, USA, 2015
- 2014 [D.2] **Dense 3D Face Alignment in Real-Time**  
Carnegie Mellon University, People Image Analysis Workshop (30 mins)  
Pittsburgh, PA, USA, 2014

2012 [D.1] | **Facial Expression Analysis based on 3D Deformable Models**  
Carnegie Mellon University, Vision and Autonomous Systems Center Seminar (1 hour)  
Pittsburgh, PA, USA, 2012

## Publications

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### Theses

- 2012 [T.2] | László A. Jeni, **Study on Facial Expression Analysis based on 3D Deformable Model**, PhD thesis, The University of Tokyo, 2012.
- 2004 [T.1] | László A. Jeni, **Artificial Intelligence Techniques used in the Game of Go**, Master's thesis, Eötvös Loránd University, 2004.

### Journal articles

- 2018 [J.8] | Itir Onal Ertugrul, László A. Jeni, Hamdi Dibeklioglu, **Modeling and Synthesis of Kinship Patterns of Facial Expressions**, in *In Image and Vision Computing*, 2018 (accepted)
- 2017 [J.7] | Sergely Tulyakov, László A. Jeni, Jeffrey F. Cohn, Nicu Sebe, **Viewpoint-consistent 3D Face Alignment**, in *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2017 (<http://doi.org/10.1109/TPAMI.2017.2750687>)
- 2016 [J.6] | László A. Jeni, Jeffrey F. Cohn, Takeo Kanade, **Dense 3D Face Alignment from 2D Video for Real-Time Use**, in *In Image and Vision Computing*, 2016 (<http://dx.doi.org/10.1016/j.imavis.2016.05.009>)
- 2014 [J.5] | Jeffrey M. Girard, Jeffrey F. Cohn, László A. Jeni, Michael A. Sayette, Fernando De La Torre, **Spontaneous facial expression in unscripted social interactions can be measured automatically**, in *Behavior Research Methods*, Springer US, 2014.
- 2012 [J.4] | László A. Jeni, András Lőrincz, Tamás Nagy, Zsolt Palotai, Judit Sebők, Zoltán Szabó, Dániel Takács, **3D shape estimation in video sequences provides high precision evaluation of facial expressions**, in *In Image and Vision Computing*, Elsevier, volume 30, 2012.
- 2012 [J.3] | László A. Jeni, Hideki Hashimoto, Takashi Kubota, **Robust Facial Expression Recognition Using Near Infrared Cameras**, in *Journal of Advanced Computational Intelligence and Intelligent Informatics*, Fujipress, volume 16, 2012.
- 2010 [J.2] | Hideki Hashimoto, Takeshi Sasaki, László A. Jeni, **Current Status of Intelligent Space**, in *Journal of Measurement Science and Instrumentation*, volume 01, 2010.
- 2008 [J.1] | László A. Jeni, György Flórea, András Lőrincz, **InfoMax Bayesian Learning of the Furuta Pendulum**, in *Acta Cybernetica*, volume 18, 2008.

### Conferences & workshops

- 2018 [C.36] | Jeffrey F. Cohn, László A Jeni, Itir Onal Ertugrul, Donald Malone, Michael S. Okun, David Borton, Wayne Goodman. **Automated multimodal measurement of behavioral response to deep brain stimulation in obsessive-compulsive disorder: A pilot study**. In *Proceedings of the ACM International Conference on Multimodal Interfaces (ICMI)*, Boulder, CO, 2018.
- 2018 [C.35] | Itir Onal Ertugrul, László A Jeni, Jeffrey F. Cohn. **FACSCaps: Pose-Independent Facial Action Coding With Capsules**. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops*. 2018.

- 2018 [C.34] Mengtian Li, László A Jeni, Deva Ramanan. **Brute-Force Facial Landmark Analysis With A 140,000-Way Classifier**. In 32<sup>nd</sup> AAAI Conference on Artificial Intelligence, 2018.
- 2018 [C.33] Mohit Sharma, Dragan Ahmetovic, László A Jeni, Kris Kitani. **Recognizing Visual Signatures of Spontaneous Head Gestures**. In IEEE Winter Conf. on Applications of Computer Vision (WACV), 2018.
- 2017 [C.32] Michel F Valstar, Enrique Sánchez-Lozano, Jeffrey F Cohn, László A Jeni, Jeffrey M Girard, Zheng Zhang, Lijun Yin, Maja Pantic. **FERA 2017 - Addressing Head Pose in the Third Facial Expression Recognition and Analysis Challenge**. In 2017 11th IEEE International Conference and Workshops on Automatic Face and Gesture Recognition (FG), 2017.
- 2017 [C.31] Jeffrey M Girard, Wen-Sheng Chu, László A Jeni, Jeffrey F Cohn, Fernando De la Torre. **Sayette Group Formation Task (GFT) Spontaneous Facial Expression Database**, In 2017 11th IEEE International Conference and Workshops on Automatic Face and Gesture Recognition (FG), 2017.
- 2016 [C.30] László A. Jeni, Sergey Tulyakov, Lijun Yin, Nicu Sebe, Jeffrey F. Cohn. **The First 3D Face Alignment in the Wild (3DFAW) Challenge**. In European Conference on Computer Vision, pp. 511-520. Springer International Publishing, 2016.
- 2016 [C.29] Ciprian Corneanu, Marc Oliu, Sergio Escalera, László A Jeni, Jeffrey F. Cohn, Takeo Kanade, **Continuous Supervised Descent Method for Facial Landmark Localisation**, In Asian Conference on Computer Vision (ACCV), 2016.
- 2016 [C.28] Zoltán Tősér, László A Jeni, András Lőrincz, Jeffrey F Cohn, **Deep Learning for Facial Action Unit Detection Under Large Head Poses**, In 2014 European Conference on Computer Vision and Workshops(ECCVW), 2016.
- 2016 [C.27] László A Jeni, Jeffrey F Cohn, **Person-independent 3D Gaze Estimation using Face Frontalization**, In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops, 2016.
- 2016 [C.26] Zoltán Tősér, Robert Rill, Kinga Faragó, László A Jeni, András Lőrincz, **Personalization of Gaze Direction Estimation with Deep Learning**, In Informatik (KI 2016), 2016.
- 2015 [C.25] László A. Jeni, Jeffrey F. Cohn, Takeo Kanade, **Dense 3D Face Alignment from 2D Videos in Real-Time**, IEEE International Conference on Automatic Face and Gesture Recognition (FG), 2015 (**Best Paper Award**)
- 2015 [C.24] Jeffrey M. Girard, Jeffrey F. Cohn, László A. Jeni, Simon Lucey, Fernando De la Torre, **How much training data for facial action unit detection?**, IEEE International Conference on Automatic Face and Gesture Recognition (FG), 2015 (accepted)
- 2014 [C.23] László A. Jeni, András Lőrincz, Zoltán Szabó, Jeffrey F. Cohn, Takeo Kanade, **Spatio-temporal Event Classification using Time-series Kernel based Structured Sparsity**, In 2014 European Conference on Computer Vision (ECCV), 2014.
- 2013 [C.22] András Lőrincz, Gyöngyvér Molnár, László A. Jeni, Zoltán Tősér, Attila Rausch, Jeffrey F. Cohn, Benó Csapó, **Towards entertaining and efficient educational games**, In 2013 NIPS Workshop on Data Driven Education, 2013.
- 2013 [C.21] András Lőrincz, László A. Jeni, Zoltán Szabó, Jeffrey F. Cohn, Takeo Kanade, **Emotional Expression Classification Using Time-Series Kernels**, In 2013 IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), 2013.

- 2013 [C.20] László A. Jeni, Jeffrey M. Girard, Jeffrey F. Cohn, Fernando De La Torre, **Continuous AU intensity estimation using localized, sparse facial feature space**, In 2013 10th IEEE International Conference and Workshops on Automatic Face and Gesture Recognition (FG), 2013.
- 2013 [C.19] László A. Jeni, Jeffrey F. Cohn, Fernando De La Torre, **Facing Imbalanced Data-- Recommendations for the Use of Performance Metrics**, In 2013 Humaine Association Conference on Affective Computing and Intelligent Interaction (ACII), 2013.
- 2011 [C.18] László A. Jeni, Hideki Hashimoto, András Lőrincz, **Efficient, Pose Invariant Facial Emotion Classification using 3D Constrained Local Model and 2D Shape Information**, In 2011 IEEE Computer Vision and Pattern Recognition Workshops (CVPR Workshops), 2011.
- 2011 [C.17] Leon Palafox, László A. Jeni, Hideki Hashimoto, **Using Conditional Random Fields to validate observations in a 4W1H paradigm**, In 4th Conference on Human System Interaction (HSI), 2011. (Session Best Paper Award)
- 2011 [C.16] Leon Palafox, László A. Jeni, Hideki Hashimoto, **5W1H as a Human Activity Recognition Paradigm in the iSpace**, In 8th Asian Control Conference (ASCC), 2011.
- 2011 [C.15] László A. Jeni, Dániel Takács, András Lőrincz, **High Quality Facial Expression Recognition in Video Streams using Shape Related Information only**, In 2011 IEEE International Conference on Computer Vision Workshops (ICCV Workshops), 2011.
- 2010 [C.14] Leon Palafox, László A. Jeni, Hideki Hashimoto, B. H. Lee, **Recognizing Facial Expressions in the Intelligent Space**, In The 2010 International Symposium on Intelligent Systems (iFAN), 2010.
- 2010 [C.13] László A. Jeni, Hideki Hashimoto, **Facial Expression Recognition using Near Infrared Cameras**, In 1st International Workshop on Cognitive Infocommunications (CogInfoCom), 2010.
- 2010 [C.12] Zoltán Istenes, Máté Tejfel, László A. Jeni, **Verified Mobile Code Repository Simulator for the Intelligent Space**, In 8th International Conference on Applied Informatics (ICAI), 2010.
- 2009 [C.11] Péter Zanaty, Péter Korondi, Gábor Sziebig, László A. Jeni, **Image based Automatic Object Localisation in iSpace Environment**, In 10th International Symposium of Hungarian Researchers on Computational Intelligence and Informatics (CINTI), 2009.
- 2009 [C.10] László A. Jeni, Péter Korondi, Zoltán Istenes, Hideki Hashimoto, **Safe Mobile Robot Control in the iSpace Environment**, In 9th IFAC Symposium on Robot Control (SYROCO), 2009.
- 2009 [C.9] László A. Jeni, Zoltán Istenes, Máté Tejfel, Péter Korondi, Hideki Hashimoto, **Adaptive, safe mobile robot programming in the Intelligent Space**, In 2nd IEEE International Conference on Human System Interaction (HSI), 2009.
- 2008 [C.8] Máté Tejfel, Zoltán Istenes, László A. Jeni, **Verified Mobile Code Repository in the Intelligent Space**, In 6th Conference of PhD Students in Computer Science (CSCS), 2008.
- 2008 [C.7] 佐々木 毅, 周 淼磊, 横井 一樹, Leon Palafox, 田村 一, László A. Jeni, Peshala Gehan Jayasekara, 橋本 秀紀, **実環境における移動ロボットナビゲーションシステムの研究開発**, In 第9回計測自動制御学会システムインテグレーション部門講演会(SI2008), 2008.

- 2008 [C.6] László A. Jeni, Zoltán Istenes, Péter Szemes, Hideki Hashimoto, **Robot Navigation Framework Based on Reinforcement Learning for Intelligent Space**, In 1st IEEE International Conference on Human System Interaction (HSI), 2008.
- 2007 [C.5] László A. Jeni, Zoltán Istenes, Máté Tejfel, **Safe Mobile Code in the Intelligent Space**, In 2nd Symposium of Young Researchers on Intelligent Systems (IRFIX), 2007.
- 2007 [C.4] László A. Jeni, Zoltán Istenes, Péter Korondi, Hideki Hashimoto, **Hierarchical Reinforcement Learning for Mobile Robot Navigation using the iSpace Concept**, In 11th IEEE International Conference on Intelligent Engineering Systems (INES), 2007.
- 2007 [C.3] György Antal, László Szirmai-Kalos, László A. Jeni, **Rendering Subdivision Surfaces Efficiently on the GPU**, In 4th Hungarian Conference on Computer Graphics and Geometry, 2007.
- 2006 [C.2] László A. Jeni, Zoltán Istenes, Péter Korondi, Hideki Hashimoto, **Mobile Agent Control in Intelligent Space using Reinforcement Learning**, In International Symposium of Hungarian Researchers on Computational Intelligence (HUCI), 2006.
- 2005 [C.1] László A. Jeni, **Real-time dual paraboloid shadow mapping**, National Scientific Conference of Students (OTDK 2005), Section of Computer Graphics (1st place), 2005.

### Patents

- 2013 [P.3] László A. Jeni, **Method and apparatus for locating features of an object using deformable models**, European Patent, EP2672423A1, 2013.
- 2013 [P.2] László A. Jeni, **Method and apparatus using adaptive face registration method with constrained local models and dynamic model switching**, European Patent, EP2672424A1, 2013.
- 2013 [P.1] Zoltán Szabó, László A. Jeni, Dániel Takács, **Method and apparatus with deformable model fitting using high-precision approximation**, European Patent, EP2672425A1, 2013.

### **Additional Information**

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Memberships	IEEE (2010 -), Siggraph (2017-)
Languages	Hungarian (native), English (fluent), Japanese (intermediate), German (basic)
Computer languages	Matlab, Python, C++, C#