Ibragim Atadjanov

Curriculum Vitae
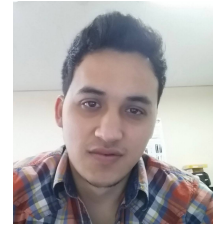
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G scholar.google.com/citations?user=kwtn_EQAAAAJ

Degrees

30/7/2022 **Doctor of Science in Technics**,
The Supreme Attestation Commission of the Republic of Uzbekistan based on the decision of the Kyung Hee University (South Korea), Tashkent, Uzbekistan.

3/2014 – 2/2020 **Doctor of Philosophy**,
Dept. of Computer Science & Engineering, Kyung Hee University, South Korea.
Advisor: Prof. Seungkyu Lee, PhD.
Ph.D. Thesis: Reflection Symmetry Pattern Detection in Real-world Images.

9/2009 – 6/2011 **Master in Information Security**,
Tashkent University of Information Technologies, Tashkent, Uzbekistan.

9/2004 – 6/2008 **Bachelor in Information Technology**,
Urgench State University, Urgench, Uzbekistan.

Honor, awards & activities

Research Awards
- **Best Full Paper Award** at The ACM Symposium on Virtual Reality Software and Technology (VRST) 2019, Sydney, Australia.
  Title: "Measurement-based Hyper-elastic Material Identification and Real-time FEM Simulation for Haptic Rendering"
- **Itek Award** recognizing an outstanding original student publication in the field of imaging science or engineering published in the IS&T Society journal (JIST or JEI), 2020.
  Title: "Perceptually Maximized Light Ray Synthesis with only Two Layered Light Field Display."

Competitive Programming Awards
- **Second place Certificate.** *ACM International Collegiate Programming Contest (ICPC)* NEERC 2010-2011, Uzbekistan (Subregion)
- **Second place Certificate.** *ACM International Collegiate Programming Contest (ICPC)* NEERC 2009-2010, Central Asia (Region)
- **Third place Certificate.** *National Olympiad on Informatics and Information Security*, Tashkent 2007

Scholarship
- **Presidency Scholarship**, Korea (During Ph.D. study)
- **Government Scholarship**, Uzbekistan (During B.Sc. & M.Sc. study)

Reviewer
- **IEEE Access** (Electronic ISSN: 2169-3536), IEEE
- **Computer Methods and Programs in Biomedicine** (ISSN: 2666-9900), Elsvier B.V.
- **Signal Processing: Image Communication** (ISSN: 0923-5965), Elsvier B.V.
- **Journal of Imaging Science and Technology** (ISSN: 1943-3522 (Online)), IS&T

Positions (Academic/Research)

1/2023 – present **Professor**, *Tashkent University of Information Technologies named after al-Khwarizmi*, Uzbekistan.

1/2022 – present **Postdoctoral Researcher**, *MSLAB Universidad Rey Juan Carlos*, Spain.

3/2014 – 3/2020	**Research Assistant.**, *Perception and Computer Vision Lab*, Kyung Hee University.
1/2012 – 2/2014	**Research Assistant and Lecturer (part time)**, *IT Center, Tashkent University of Information Technologies*, Tashkent, Uzbekistan.
1/2012 – 7/2012	**Research Assistant (part time)**, *Supreme Attestation Commission under the Cabinet of Ministers of the Republic of Uzbekistan*, Tashkent, Uzbekistan.
1/2010 – 1/2011	**Intern Research Assistant and Developer**, *Tashkent University of Information*, Tashkent, Uzbekistan.
8/2008 – 8/2009	**Research Assistant**, *Urgench Branch of Tashkent University of Information*, Urgench, Uzbekistan.

Positions (Industry)

2/2021 – 1/2022	**Senior Research Engineer (R&D)**, *DRTECH Corp.*, South Korea.
4/2020 – 1/2021	**Research Engineer (R&D)**, *DRTECH Corp.*, South Korea.
2/2013 – 3/2014	**Senior Software Developer**, *eSector Solutions Ltd.*, Tashkent, Uzbekistan, `https://www.linkedin.com/company/esector-solutions/about/`.
10/2012 – 2/2013	**Web Developer (remote)**, *Yarkie Resheniya, Internet agentstvo*, Russia, `http://www.yarkie.ru`.
7/2011 – 9/2012	**Web Developer (remote)**, *IT-ACES LTD*, Russia, `http://it-aces.com`.
3/2011 – 9/2011	**Database Manager - Junior Dev. Assistant (remote)** , *Jaccomo (prev. Landmark Technology Partners Inc.)*, United States, `https://www.jaccomo.com/`.

Research Projects

1/2022 – Present	**Learning Physics based Simulation via Machine Learning techniques.**
4/2020 – 1/2022	**Deep learning based low energy x-ray image denoising.** In this project, a generator network with tight-frame decomposition and a GAN-based learning strategy are utilized for training.
4/2020 – 1/2022	**High image quality with reduced x-ray dose for C-arm medical devices.** In this project, I addressed problems as Poisson distribution variance-stabilization, noise estimation, Motion detection, Object Detected Dose Control with Semantic Segmentation via DNN model, Motion-aware temporal averaging with 30fps (at max).
4/2020 – 1/2022	**Non-rigid multi-resolution multi-modal registration for dual energy x-ray images.** In this project, for Dual Energy Subtraction x-ray imaging technology, I have developed non-rigid multi-resolution image registration method utilizing free-form deformation with multi-resolution registration and currently developing a physics-aware deep learning based registration model with diffeomorphic deformation.
9/2015 – 2/2020	**Human Symmetry Perception and Computation Symmetry Detection in Real-world Images. Percv Lab, KHU** In this project, we proposed a novel - Appearance of Structure - feature that captures the local spatial structure. Our method used as a baseline method for ICCV'2017, symmetry detection competition workshop and outperformed the challenges.
9/2018 – 2/2020	**Realistic Haptic Rendering of Hyper-elastic materials, Haptics and VR lab., KHU** In this collaborative project, we developed a data-driven framework for real-time FEM simulation of hyper-elastic object deformation in haptic-enable virtual environment.
7/2014 – 7/2017	**Perceptually Maximized Light Ray Synthesis with Dual Layered Light Field Display** In this project, I focused on improving image quality for dual layered compressive light field displays prioritizing image perceptibility considering human perception and vision.

Selected Publications

Journal
- **Atadjanov, I.** & Lee, S.. "Reflection Symmetry Detection Robust to Various Visual Stresses." under preparation to submission* to *IEEE Transactions on Image Processing (TIP)*.
- **Atadjanov, I.** & Lee, S. (2020). "Reflection Symmetry Detection in Real-world Images." *PhD thesis*.
- Abdulali, A., **Atadjanov, I.**, Lee, S. & Jeon, S. (2020). "Realistic haptic rendering of hyper-elastic material via measurement-based FEM model identification and real-time simulation." *Computers and Graphics*.
- Abdulali, A., **Atadjanov, I.** & Jeon, S. (2020). "Visually Guided Acquisition of Contact Dynamics and Case Study in Data-Driven Haptic Texture Modeling." *IEEE Transactions on Haptics (ToH)*.
- **Atadjanov, I.** & Lee, S. (2019). "Perceptually Maximized Light Ray Synthesis with only Two Layered Light Field Display." *Journal of Imaging Science and Technology (JIST)*.
- **Atadjanov, I.** & Lee, I. (2018) "Robustness of Reflection Symmetry Detection Methods on Visual Stresses in Human Perception Perspective." *IEEE Access*.

Conference
- Choi, I., **Atadjanov, I.**, Seo, W., Jo, M., Park, J., Ahn, J., Kim, T., Kim, H., Shin, C. W. (2022). "A robust method of identifying the optimal cancellation parameters for dual-energy chest x-ray imaging." In *Medical Imaging 2022: Physics of Medical Imaging*.
- Abdulali, A., **Atadjanov, I.**, Lee, S., & Jeon, S. (2019). "Measurement-based Hyper-elastic Material Identification and Real-time FEM Simulation for Haptic Rendering." In *25th ACM Symposium on Virtual Reality Software and Technology (VRTS)*.
- **Atadjanov, I.** & Lee, S. (2017). "Dual-layered light field display: maximizing image perceptibility." In *ACM SIGGRAPH Posters*.
- **Atadjanov, I.** & Lee, S. (2016). "Reflection Symmetry Detection via Appearance of Structure Descriptor," In *European Conference of Computer Vision (ECCV)*.
- **Atadjanov, I.** & Lee, S. (2015). "Bilateral symmetry detection based on scale invariant structure feature." In *IEEE International Conference on Image Processing (ICIP)*.

Workshop presentations, posters and demos
- Abdulali, A., **Atadjanov, I.**, Lee, S., & Jeon, S. (2019). "Measurement-based Hyper-elastic Material Identification and Real-time FEM Simulation for Haptic Rendering." invited for poster presentation at *ACM SIGGRAPH ASIA as best paper of ACM VRST*.
- Abdulali, A., **Atadjanov, I.** & Jeon, S. (2021). "Visually Guided Acquisition of Contact Dynamics and Case Study in Data-Driven Haptic Texture Modeling." accepted for presentation at *ToH Interactive posters at IEEE World Haptics Conference*.

Programming skills

Python	EXP: 8+ yrs	*Libraries: PyTorch, Tensorflow, Keras, OpenCV, Flask etc.*
C/C++	EXP: 12+ yrs	*Libraries: OpenCV, CUDA, SIMD (SSE2, AVX2), Caffe, etc.*
MATLAB	EXP: 8+ yrs	*Toolboxes: Statistics and Machine Learning, Signal Processing, etc.*
Java	EXP: 5+ yrs	*Libraries: JavaSE, JAVAEE, SPRING, Google Guice, etc.*
PHP	EXP: 10+ yrs	*Libraries: ZendFramework, CodeIgniter, Yii Framework, etc.*
JavaScript	EXP: 10+ yrs	*Libraries: JQuery, backbone, knockoutjs, etc.*
SQL|PL/SQL	EXP: 10+ yrs	*Databases: MySQL, PostgresSQL, Oracle, etc.*

Languages (CEFR grading)

English	C1-C2 Level
Russian	B2 Level
Uzbek	Native
Korean	A2 Level
Spanish	A2-B1 Level

Temurbek Kuchkorov

Nationality: Uzbek **Date of birth:** 22/10/1989 **Gender:** Male

📞 **Phone number:** (+998) 977082210 ✉ **Email address:** timanet4u@gmail.com

🌐 **Website:** www.tuit.uz

📍 **Home:** Yangihayot 55, 100200 Tashkent (Uzbekistan)

WORK EXPERIENCE

Dean of faculty, Computer Engineering
Tashkent University of Information Technology named after Muhammad al-Khwarizmi [10/12/2022 – Current]

City: Tashkent
Country: Uzbekistan

- BSc programs: 5
- MSc programs: 10
- Departments: Artificial Intelligence, Computer Systems, Informatics, Multimedia Technologies, Information Technologies
- Number of bachelor students: ~1500
- Number of master students: ~250

Doctoral (DSc) researcher
Tashkent University of Information Technology named after Muhammad al-Khwarizmi [04/01/2021 – 09/12/2022]

City: Tashkent
Country: Uzbekistan
Business or sector: Education

- Computer vision, medical image processing
- Processing of Satellite imagery, image classification, semantic segmentation
- Machine learning and Deep learning lagorithms in image processing
- Precision agriculture, remote sensing and GIS technologies

Senior Lecturer and Assistant Professor
Tashkent University of Information Technology named after Muhammad al-Khwarizmi [02/09/2018 – 31/12/2020]

Address: 108A, street A.Temur, 100200 Tashkent (Uzbekistan)
Website: www.tuit.uz

- Computer vision
- Satellite image processing, image classification
- Precision agriculture, remote sensing and GIS technologies

Phd researcher
Tashkent University of Information Technology named after Muhammad al-Khwarizmi [01/01/2016 – 31/08/2018]

Address: 108A, street A.Temur, 100200 Tashkent (Uzbekistan)
Website: www.tuit.uz

- data mining, big data analysis

- Using GIS technologies for providing ecological monitoring
- fuzzy logic

Teacher assistant
Tashkent University of Information Technology [23/04/2013 – 30/12/2015]

Address: 108A, street Amir Temur, 100200 Tashkent (Uzbekistan)

Website: www.tuit.uz

Business or sector: Information and communication

- OOP principles, Java programming languages
- Android application development

Teacher and Head of department
"Uzmedinfo" e-health developing center [01/02/2011 – 22/04/2013]

Address: 58, street Parkent, Tashkent (Uzbekistan)

Website: www.uzmedinfo.uz

- developing E-health portal for medical organizations
- document sharing in Sharepoint
- training in Computer skills

EDUCATION AND TRAINING

Deep Learning based Image Processing
University of Klagenfurt [09/12/2019 – 08/02/2020]

Address: Klagenfurt (Austria)

- Introduction to deep learning an Neural networks
- Nonlinear dynamics
- Machine learning and Tensorflow

Training in Precision agriculture
Technical university of Berlin [17/08/2019 – 30/08/2019]

Address: Berlin (Germany)

- GIS visualization
- MODSNOW-Tool – a remote sensing based instrument to monitor water resources
- Yield sensors for Precision Agriculture
- Application of Precision Agriculture for crops growing
- Remote Sensing and Space Sensors Systems
- Using of SENTINEL1-2-3 imagery for agricultural field monitoring

Big data medical engineering
Belarusian state university of informatics and radioelectronics (BSUIR) [17/07/2018 – 31/07/2018]

Address: Minsk (Belarus)

- Big data technologies and trends
- Visualization and analysis Big data
- Technics of medical tools and sensors
- Expert systems in medicine

ICT for the Improvement of Government Capacity and Services (D): Information Security Course
Okinawa international center (OIC) [14/03/2017 – 27/07/2017]

Address: Okinawa (Japan)

- Software development
- Information security

- E-government
- GIS public services

Inha training program for TUIT lecturers
Inha University [02/01/2014 – 28/02/2014]

Address: Incheon (South Korea)

- Software Engineering
- Software Development Methodology
- Computer Security
- Database Management System
- Mobile Computing
- Operating Systems

Master in Applied informatics
Tashkent University of Infomation Technologies [01/09/2010 – 01/06/2012]

Address: str. A.Temur-108a, 100200 Tashkent (Uzbekistan)

Bachelor in Informatics and Information technologies
Tashkent University of Infomation Technologies [01/09/2006 – 01/06/2010]

Address: str. A.Temur-108a , 100200 Tashkent (Uzbekistan)

PROJECTS

NICoPA - New and Innovative Courses for Precision Agriculture (Erasmus+)
[15/11/2018 – 15/11/2022]

Role in project: Project Coordinator, Manager

Achievements:

1. Development new and innovative cources for PA
2. Establishment GisLab and PASO (PA Service Office)
3. New master program - Geoinformation systems and technologies

Development Innovative device for measuring salinity, temprature and level of groundwater
[01/10/2022 – Current]

Role in project: Software developer, API development

RESEARCH AREA AND SELECTED PUBLICATIONS

Research area

(Ph.D., 2018) - Intelligent ecological monitoring system using fuzzy logic and geoinformation modeling

DSc research thesis: Development method and algorithms for classification complex structured images using deep neural networks

Recent publications

1. **T.Kuchkorov**, F.Safarov, J.Djumanov, T.Ochilov, Ch.Ch.Jean, A.Abdusalomov, and Young-Im Cho. "Improved Agricultural Field Segmentation in Satellite Imagery Using TL-ResUNet Architecture." *Sensors* 22, no. 24 (2022): 9784.
2. **T.Kuchkorov**, T.Ochilov, E.Gaybulloyev, N.Sobitova. Agro-field boundary detection using Mask R-CNN from satellite and aerial images // 2021 International conference on information science and communications technologies ICISCT, –Tashkent, 2021
3. **Kuchkorov T.A.**, Ruzibaev O.B. Methods and tools of imgae classification and segmentation using neural networks // Scientific Journal "The descendants of Muhammad al-Khwarizmi", №1(11). –Tashkent, 2020.
4. **T.A. Kuchkorov**, Sh. N. Urmanov, K. Kyamakya. Perspectives of deep learning based satellite imagery analysis and efficient training of the U-Net architecture for land-use classification. FLINS 2020 Developments of Artificial Intelligence Technologies in Computation and Robotics, Cologne, Germany, - 2020.

5. **T.Kuchkorov**, Sh.Urmanov. Satellite image formation and preprocessing methods // 2020 International conference on information science and communications technologies ICISCT, –Samarkhand, 2020
6. Kh. Nosirov, **T.A. Kuchkorov**, J. C. Chedjou, K. Kyamakya, et al. The greenhouse control based-vision and sensors. FLINS 2020 Developments of Artificial Intelligence Technologies in Computation and Robotics, Cologne, Germany, - 2020.
7. Usmonov R.N., **Kuchkorov T.A.**, Seitnazarov K.K., A comprehensive study and assessment of ecologically intense regions in conditions of heterogeneous information // "Big data and advanced analytics", The international scientific-practical conference, Republic of Belarus, Minsk, 2019. –p. 122-132.
8. R.Usmanov, A.Abdusalomov, **T.Kuchkorov**, M.Mukhiddinov. "Image Enhancement based on Histogram Equalization for Indoor Environment Objects" International Scientific-Practical and Spiritual-Educational Conference Dedicated to the 1235th Anniversary of Muhammad Al-Khwarizmi, April 2018, Tashkent, Uzbekistan.
9. "Computer Vision" Tutorial Book."Tashkent University of Information Technologies named after Muhammad Al_Khwarizmi, December, 2018. Tashkent, Uzbekistan. R.Usmanov, **T.Kuchkorov**, A.Abdusalomov
10. Usmonov R.N., **Kuchkorov T.A.**, Endo Tetsuji, Processing real time environmental data through sensor network // International conference on information science and communications technologies ICISCT, –Tashkent, 2017.
11. Usmonov R.N., **Kuchkorov T.A.**, Oteniyazov R.I., Environmental monitoring to get special data from observation points (based on ecological factors) // Scientific Journal European Science Review, –Austria, 2016.

ORGANISATIONAL SKILLS

Programming and Frameworks

Programming skills:

1. Python (EXP: 4+ yrs) Libraries: PyTorch, Tensorflow, Keras, OpenCV, Flask etc.
2. C/C++ (EXP: 8+ yrs) Libraries: OpenCV, CUDA etc.
3. Java (EXP: 8+ yrs) Libraries: JavaSE, FX, SPRING etc.
4. PHP (EXP: 4+ yrs) Libraries: CodeIgniter, Yii Framework, etc.
5. JavaScript (EXP: 8+ yrs) Libraries: JQuery, Leaflet etc.
6. SQL|PL/SQL (EXP: 8+ yrs) Databases: MySQL, PostgresSQL, Oracle, etc
7. MATLAB (EXP: 5+ yrs) Toolboxes: IPT, Statistics and ML, Signal Processing, etc.

LANGUAGE SKILLS

Mother tongue(s): **Uzbek**

Other language(s):

English (IELTS 6.0)

LISTENING B2 **READING** B2 **WRITING** B2

SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** B2

Russian

LISTENING B2 **READING** C1 **WRITING** B1

SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** B1

DIGITAL SKILLS

Microsoft Office / Google Drive / Google Docs / Zoom / Facebook / Instagram / Microsoft Word / Microsoft Excel / Microsoft Powerpoint