



Europass Curriculum Vitae



Personal information

First name / Surname **Anton A. Penzov**
Address **Institute of Information and Communication Technologies
Bulgarian Academy of Sciences
Acad. G. Bonchev St., Block 25A,
1113 - Sofia, BULGARIA**
Telephones **+359-2-9796608** **+359-887-746189**
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E-mail apenzov@parallel.bas.bg; apenzov@yahoo.com;
Nationality **Bulgarian**
Date of birth **04.12.1964**
Gender **male**

Occupational field

**Research and Applications in the fields of
Computer Graphics and Multimedia Technologies**

- Realistic Image Creation;
- Illumination and BRDF models;
- Advanced Rendering Techniques;
- Ray Tracing Algorithms in Theory and Practice;
- Efficient Monte Carlo Methods in Photorealistic Image Synthesis;
- Colours and Colour Systems;
- Realistic 2D, 2.5D and 3D animation for TV and other applications;
- Multimedia Productions and Interactive Presentations;
- VRML – Virtual Reality Modelling Language in Internet.

Work experience

Dates **01.03.2004 - present**
Occupation or position held **Doctor in Department of Parallel Algorithms**
Main activities and responsibilities **Scientific research**
Name and address of employer **Institute of information and communication technologies, BAS,
(former Institute for Parallel Processing – till 01.07.2010)
Acad. G. Bonchev St., Block 25A, 1113 Sofia, Bulgaria**
Type of business or sector **Efficient computational and super-convergent Monte Carlo methods for Computer Graphics
applications, as well as education of Ph.D. students**

Dates	1994 - 2004
Occupation or position held	Departments: Biomechanics and Informatics
Main activities and responsibilities	Specialty education of students
Name and address of employer	South-West University "Neofit Rilski", Ivan Michailov 66 St., 2700 Blagoevgrad, Bulgaria
Type of business or sector	Lectures and education in Computer Graphics and Multimedia Technologies for students majored in Biomechanics, Informatics, Mathematics and Informatics, and Art Sciences.
Dates	1998 - 2003
Occupation or position held	Main Lector in Computer Graphics
Main activities and responsibilities	Specialty education of students
Name and address of employer	National High School "St. St. Cyril and Methodi", Canko Cerkovski 2 St., 2700 Blagoevgrad, Bulgaria
Type of business or sector	Education in Computer Graphics of Art class students.
Dates	1998
Occupation or position held	Head of Multimedia Lab
Main activities and responsibilities	Coordination of activities, working projects and production
Name and address of employer	American University in Bulgaria (AUBG), Georgi Izmirliiev 1 Sq., 2700 Blagoevgrad, Bulgaria
Type of business or sector	Education of students, coordination of multimedia projects, productions and presentations for the purposes of AUBG.
Dates	1994 - 1997
Occupation or position held	Head of Computer Graphics and Animation Laboratory,
Main activities and responsibilities	Coordination of working projects and production
Name and address of employer	CoNet Ltd., Hristo Smirnenski 8 St., 2700 Blagoevgrad, Bulgaria
Type of business or sector	Producing of new methods, algorithms for computer graphics, animation, special effects, multimedia, interactive, and TV productions.
Dates	1988 - 1993
Occupation or position held	Ph.D. Student in Computer Graphics
Main activities and responsibilities	Scientific Researches
Name and address of employer	Computer and Automation Research Institute, Hungarian Academy of Sciences (MTA SZTAKI), Kende St. 13-17, 1111 Budapest, Hungary
Type of business or sector	Advanced and Efficient Methods for Photorealistic Image Creation, New Rendering and Ray Tracing Techniques and Algorithms.

Education and training

Dates	1988 - 1993
Title of qualification awarded	Ph.D. in Computer Graphics (Ph.D. Thesis in the field of Photorealistic Image Creation by Efficient Ray Tracing Methods)
Name and type of organisation providing education and training	Computer and Automation Research Institute, Hungarian Academy of Sciences (MTA SZTAKI)
Dates	1987 - 1988
Title of qualification awarded	M.Sc. in Informatics
Name and type of organisation providing education and training	Institute of Applied Mathematics and Informatics, Technical University - Sofia

Dates 1982 - 1987
 Title of qualification awarded M.Sc. in Electronics
 Name and type of organisation providing education and training Technical University - Sofia

Dates 1978 - 1982
 Title of qualification awarded mathematician
 Name and type of organisation providing education and training Mathematical High School, Blagoevgrad

Personal skills and competences

Mother tongue Bulgarian

Other languages English, Hungarian, Russian.

Self-assessment

European level ()*

English

Hungarian

Russian

Understanding				Speaking				Writing	
Listening		Reading		Spoken interaction		Spoken production			
C2	Proficient user	C2	Proficient user	C2	Proficient user	C2	Proficient user	C2	Proficient user
C2	Proficient user	C2	Proficient user	C2	Proficient user	C2	Proficient user	C1	Proficient user
C2	Proficient user	C2	Proficient user	C2	Proficient user	C2	Proficient user	C1	Proficient user

(*) [Common European Framework of Reference for Languages](#)

Organisational and social skills and competences

- Head of Computer Graphics and Animation Laboratory, CoNet Ltd., Blagoevgrad, 1994-1997.
- Head of Multimedia Lab, American University in Bulgaria (AUBG), Blagoevgrad, all 1998.

Computer and technical skills and competences

- Program Languages: FORTRAN, BASIC, PASCAL, C и C++.
- Text Editors: LaTeX, WORD PERFECT, Microsoft WORD, etc.
- Other: Microsoft EXECL и Microsoft ACCESS.
- Computer Graphics: Adobe PhotoShop, Corel Draw, 3D Studio Max, Povray, Vivid, etc.
- Multimedia: Microsoft Power Point, Adobe Premiere, Media Studio, Scala, etc.

Other skills and competences

- Main topics of qualification: Computer Graphics and Applications, Photorealistic Image Creation, Efficient Monte Carlo Methods in Computer Graphics, BRDF Models, Special Effects, Colours and Colour Systems, Multimedia Technologies and Production.
- Membership in Scientific/Professional Organizations: Union of Automatics and Informatics

Driving licence

Driving licence for categories of vehicle: M and B.

Additional information

References:

1. Prof. D.Sc. László Szirmay-Kalos, Technical University – Budapest, Hungary, szirmay@iit.bme.hu, <http://www.iit.bme.hu/~szirmay/szirmay.html>
2. Prof. Ph.D. Mateu Sbert, University of Girona, Spain, mateu@ima.udg.edu, <http://ima.udg.edu/~mateu/>
3. Assoc. Prof. Ph.D. Stefan Stefanov, SWU, Bulgaria, stefanovsm@abv.bg, <http://acad.swu.bg/cv.php?uid=stefanovsm>

Annex 1 Scientific Projects:

1. *"Efficient Monte Carlo Methods in Photorealistic Image Synthesis"*,
Project Coordinator: Dr. Anton A. Penzov,
International Scientific Cooperation between BAS and Hungarian Academy of Sciences,
JOINT RESEARCH PROJECT Grad № 7
2007 – present
2. *"Efficient Monte Carlo Methods for Large-Scale Scientific Problems"*,
Project Coordinator: Prof. D.Sc. Ivan. Dimov,
NSF DTK-02/44,
2010
3. *"Monte Carlo Sensitivity Studies of Environmental Security"*,
Project Coordinator: Prof. D.Sc. Ivan. Dimov,
NATO Science Project ESP.EAP.CLG.982641,
2007 – 2009
4. *"Bulgarian IST Centre of Competence in 21 Century" (BIS-21++)*,
Project Coordinator: acad. Kiril Boyanov,
FP6-2004-ACC-SSA-2, INCO-CT-2005-016639,
2005 – 2007
5. *"Enabling Grids for E-science in Europe (EGEE)"*,
Project Coordinator: Prof. D.Sc. Ivan. Dimov,
VI Framework Programme of EU, FP6-2002-Infrastructures-2, IST-2003-508833,
2004 – 2006

Annex 2 Publications:

1. B. Tóth, L. Szirmay-Kalos, M. Magdics and A. Penzov, *Detector Modeling with 4D Filtering in PET*, 8th Conference of the Hungarian Association for Image Processing and Pattern Recognition, KÉPAF 2011, January 25-28, Szeged, Hungary, (2011), pp. 27-39, Online Proceedings link: <http://www.inf.u-szeged.hu/kepaf2011/proceedings.php>
2. M. Magdics, L. Szirmay-Kalos, B. Tóth, Á. Csenedesi and Anton A. Penzov, *Scatter Estimation for PET Reconstruction*, NMA'10, Borovets, Bulgaria, LNCS vol. 6046, (2011), pp. 77-86, ISSN 0302-9743, ISBN 9783-642-18465-9, DOI: 10.1007/978-3-642-18466-6_8.
3. A. A. Penzov, G. I. Sirakova, V. N. Koylazov and N. M. Mitev, *New Approximation of Phong BRDF Model for Monte Carlo Image Rendering with Uniform Quadrangle Separation*, Proceedings of the International Conference Automatics and Informatics'10, Sofia, Bulgaria, vol. I, (2010), pp. I-237—I-240, ISSN 1313-1850.
4. A. A. Penzov, I. T. Dimov, N. M. Mitev, G. I. Sirakova and L. Szirmay-Kalos, *Examining the Distribution of Sampling Point Sets on Sphere for Monte Carlo Image Rendering*, American Institute of Physics Conference Proceedings, AIP vol. 1281, (2010), pp. 2103-2106, ISSN 0094-243X, ISBN 978-0-7354-0834-0, DOI: 10.1063/1.3498369.
5. A. A. Penzov, I. T. Dimov, G. I. Sirakova and V. N. Koylazov, *Monte Carlo Estimator for Image Creation with Symmetric Sampling of Phong BRDF Model*, American Institute of Physics Conference Proceedings, AIP vol. 1281, (2010), pp. 2095-2098, ISSN 0094-243X, ISBN 978-0-7354-0834-0, DOI: 10.1063/1.3498366.
6. L. Szirmay-Kalos, B. Tóth, M. Magdics, D. Légrády and A. Penzov, *Gamma Photon Transport on the GPU for PET*, LNCS vol. 5910, (2010), pp. 433-440, ISSN 0302-9743, ISBN 978-3-642-12534-8.
7. A. A. Penzov, I. T. Dimov, L. Szirmay-Kalos and V. N. Koylazov, *Analysis of the Monte Carlo Image Creation by Uniform Separation*, LNCS vol. 5910, (2010), pp. 417-424, ISSN 0302-9743, ISBN 978-3-642-12534-8.
8. L. Szirmay-Kalos, L. Szécsi and A. A. Penzov, GPU Pro: Advanced Rendering Techniques, Book edited by Wolfgang Engel, Section V: Image Space (Christopher Oat, section editor), Chapter 3: *Environment Mapping with Floyd-Steinberg Halftoning*, A K Peters, Natick, Massachusetts, 2010, p. 715, ISBN 978-1-56881-472-8.
9. A. A. Penzov, I. T. Dimov, L. Szirmay-Kalos, V. N. Koylazov, N. M. Mitev and G. I. Sirakova, *Generalized Discrepancy of Points Distributed on Hemisphere by Uniform Separation Techniques*, Proceedings of the International Conference Automatics and Informatics'09, Sofia, Bulgaria, vol. I, (2009), pp. I-117—I-120, ISSN 1313-1850.
10. A. A. Penzov, I. T. Dimov and V. N. Koylazov, *A Quasi Monte Carlo Solution of the Rendering Equation by Uniform Quadrangle Separation*, American Institute of Physics Conference Proceedings, AIP vol. 1148, (2009), pp. 184-189, ISSN 0094-243X, ISBN 978-0-7354-0685-8, DOI: 10.1063/1.3225268.
11. László Szirmay-Kalos, László Szécsi and Anton A. Penzov, *Importance Sampling with Floyd-Steinberg Halftoning*, Eurographics 2009, Munich Germany, EG Short Papers (2009), pp.69-72, ISSN 1017-4656.
12. L. Szécsi, L. Szirmay-Kalos and A. A. Penzov, *Environment mapping with halftoning*, In: Csetverikov Dmitrij, Szirányi Tamás (ed.), 7th Conference of the Hungarian Association for Image Processing and Pattern Recognition, Budapest, Hungary, (2009), Online Proceedings link: http://vision.sztaki.hu/~kepaf/kepaf2009_CD/files/124-10-floydsteinberg.pdf.
13. Anton A. Penzov and Galya Hristova, *A Monte Carlo Approach for Testing and Assessing of Acquired Knowledge in Computer Graphics*, J. of ELEKTROTECHNICA & ELEKTRONICA, No. 3-4, (2009), pp. 16-20, ISSN 0861-4717.

14. Anton A. Penzov, Ivan T. Dimov and Vladimir N. Koylazov, *A New Solution of the Rendering Equation with Stratified Monte Carlo Approach*, ICNAAM 2008, American Institute of Physics Conference Proceedings, AIP vol. 1048, (2008), pp. 432-435, ISSN 0094-243X, ISBN 978-0-7354-0576-9.
15. Anton A. Penzov, Ivan T. Dimov and Stanislava S. Stoilova, *Quasi Monte Carlo Approach with Uniform Separation for Solving of the Rendering Equation*, ICNAAM 2007, American Institute of Physics Conference Proceedings, AIP vol. 1046, (2008), pp. 114-118, ISSN 0094-243X, ISBN 978-0-7354-0574-5.
16. László Szirmay-Kalos, Gábor Liktör, Anton A. Penzov, Ivan Dimov, Karolj Skala and László Szécsi, *Examining Random Number Generators Used in Stochastic Iteration Algorithms*, Proceedings of International Conference Automatics and Informatics'08, (2008), Section VIII, pp. 33-36, ISSN 1313-1850.
17. Anton A. Penzov, László Szirmay-Kalos, Ivan Dimov and László Szécsi, *Monte Carlo Algorithms for Photo-realistic Image Creation by Uniform Separation of the Integration Domain*, Proceedings of International Conference Automatics and Informatics'08, (2008), Section VIII, pp. 37-41, (award for best paper), ISSN 1313-1850.
18. Anton A. Penzov and Gergana Sirakova, *Fresnel Equations and Optical Material Properties for Realistic Image Synthesis* (in Bulgarian), J. of ELEKTROTECHNICA & ELEKTRONICA, № 7-8, (2008), pp. 30-35, ISSN 0861-4717.
19. I. T. Dimov, A. A. Penzov, and S. S. Stoilova, *Parallel Monte Carlo Approach for Integration of the Rendering Equation*, NM&A'06, LNCS, vol. 4310, (2007), pp.140-147, ISSN 0302-9743, ISBN 978-3-540-70940-4.
20. I. T. Dimov, A. A. Penzov, and S. S. Stoilova, *Parallel Monte Carlo Sampling Scheme for Sphere and Hemisphere*, NM&A'06, LNCS, vol. 4310, (2007), pp.148-155, ISSN 0302-9743, ISBN 978-3-540-70940-4.
21. Anton A. Penzov, Stanislava S. Stoilova, Ivan T. Dimov and Nikolay M. Mitev, *Uniform Separation for Parallel Monte Carlo Image Creation*, Fourth Hungarian Conference on Computer Graphics and Geometry, SZTAKI, Budapest, (2007), pp. 117-124, ISBN 978-963-420-931-7.
22. Anton A. Penzov and Milena Ivanova, *Digital Representation of Books for Multimedia Study*, Automatics and Informatics'07, Sofia, Bulgaria, vol. I (2007), Section VIII, pp. 9-12 (award for best paper), ISSN 1313-1850.
23. I.T. Dimov, T.V. Gurov and A.A. Penzov, *A Monte Carlo Approach for the Cook-Torrance Model*, NAA 2004, LNCS, vol. 3401, (2005), pp. 257-265, ISSN 0302-9743, ISBN 3-540-24937-0.
24. Anton A. Penzov and Milen Todorow, *A colour quantization method with histogram partition*, Proceeding of ICDMA6 (2001), pp. 191-202.
25. Anton A. Penzov, *Spectral Dependences of Fresnel Equations and Their Usage in Realistic Image Synthesis* (in Bulgarian), J. of ELEKTROTECHNICA & ELEKTRONICA, № 7-8, (1998), pp. 20-24, ISSN 0861-4717.
26. Anton A. Penzov, *Image Subdivision – An Acceleration of Colour Quantization Methods* (in Bulgarian), J. of ELEKTROTECHNICA & ELEKTRONICA, № 5-6, (1998), pp. 40-44, ISSN 0861-4717.
27. Anton A. Penzov, *A Ray Tracing Algorithm for Realistic Image Synthesis*, Proceeding of Sixth International School of Biomechanics, Blagoevgrad, (1995), pp. 150-154.
28. Anton A. Penzov, *Shading and Illumination Models in Computer Graphics- a literature survey*, MTA SZTAKI, Report CG-4, Budapest, 1992.
29. Anton A. Penzov, *A Data Base Containing Spectral Data of Materials for Creating Realistic Images, Part 3: Tables for Nonmetallic Solids*, MTA SZTAKI, Report CG-3, Budapest, 1992.

30. Anton A. Penzov, *A Data Base Containing Spectral Data of Materials for Creating Realistic Images, Part 2: Tables for Metallic Elements and Alloys*, MTA SZTAKI, Report CG-2, Budapest, 1992.
31. Anton A. Penzov, *A Data Base Containing Spectral Data of Materials for Creating Realistic Images, Part 1: Theoretical Background*, MTA SZTAKI, Report CG-1, Budapest, 1992.

Electronic publications of educational materials (multimedia production):

32. Anton A. Penzov, *Practical Education and Tests in Computer Graphics*, Blagoevgrad, Bulgaria, 2003.
33. Anton A. Penzov, *Practical Education and Tests in Multimedia Technologies*, Blagoevgrad, Bulgaria, 2002.
34. Anton A. Penzov, *Self-learning in Computer Graphics*, Blagoevgrad, Bulgaria, March 2001.
35. Anton A. Penzov, *Self-learning in Multimedia Technologies*, Blagoevgrad, Bulgaria, October 2001.
36. Anton A. Penzov, *TENDER IS THE NIGHT: Scott Fitzgerald's "Wise and Tragic Scene of Life" by Barry Chambers*, AUBG, Blagoevgrad, Bulgaria, 1998.
37. Anton A. Penzov, *American University in Bulgaria – VIRTUAL TOUR*, AUBG, Blagoevgrad, Bulgaria, 1998.

Annex 3 Educational Activity:

Main lecturing courses on "Computer Graphics" and "Multimedia Technologies", 1994-2003, SWU "Neofit Rilski" – Blagoevgrad, Bulgaria:

- 1994-1995 – "Informatics" and "Computer Graphics".
- 1995-1996 – "Informatics" and "Computer Graphics".
- 1996-1997 – "Informatics" and "Multimedia Technologies".
- 1997-1998 – "Computer Graphics" and "Multimedia Technologies".
- 1998-1999 – "Computer Graphics" and "Multimedia Technologies".
- 1999-2000 – "Computer Graphics" and "Multimedia Technologies".
- 2000-2001 – "Computer Graphics" and "Multimedia Technologies".
- 2001-2002 – "Computer Graphics" and "Multimedia Technologies".
- 2002-2003 – "Computer Graphics" and "Multimedia Technologies".

Scientific Supervisor of 20 M.Sc. Thesis in Informatics,

Department of Informatics, Faculty of Natural Sciences, SWU "Neofit Rilski" – Blagoevgrad, Bulgaria.
Average score: 5,80.

	Name	obtained degree	year of graduation/defense
1.	Elena Anastasova	M.Sc. in Informatics	1998
2.	Vyara Grigorova	M.Sc. in Informatics	1998
3.	Spas Damyanov	M.Sc. in Informatics	1998
4.	Stefanos Dronzas	M.Sc. in Informatics	1998
5.	Kristina Georgieva	M.Sc. in Informatics	1999
6.	Krasimira Shopova	M.Sc. in Informatics	1999
7.	Desislava Ivanova	M.Sc. in Informatics	1999
8.	Milen Todorov	M.Sc. in Informatics	2000
9.	Veselin Georgiev	M.Sc. in Informatics	2000
10.	Petya Yondeva	M.Sc. in Informatics	2000
11.	Silvia Kotselova	M.Sc. in Informatics	2001
12.	Galya Hristova	M.Sc. in Informatics	2001
13.	Dimitar Stoychev	M.Sc. in Informatics	2001
14.	Svetla Ivancheva	M.Sc. in Informatics	2001
15.	Tanya Andreeva	M.Sc. in Informatics	2001
16.	Gergana Sirakova	M.Sc. in Informatics	2002
17.	Julian Bitsov	M.Sc. in Informatics	2002
18.	Nikolai Mitev	M.Sc. in Informatics	2002
19.	Milena Ivanova	M.Sc. in Informatics	2003
20.	Sonia Georgieva	M.Sc. in Informatics	2003