CURRICULUM VITAE

Dr Ivan Nestorov, Docent (University Lecturer)

1. PERSONAL DATA

Dr Ivan Nestorov was born on November 29, 1956 in Belgrade (Zemun).

In 1986 Dr Ivan Nestorov was appointed teaching assistant at the Faculty of Civil Engineering, Department of Geodesy, the subject Geodesy for the students of Civil Engineering Department and Cartography subjects, and in 1990 teaching assistant at Department of Cartography.

In 1999 Dr Ivan Nestorov was appointed docent at the Faculty of Civil Engineering, Department of Geodesy, Cartography subjects.

Dr Ivan Nestorov speaks, reads, and writes English and Russian languages.

2. EDUCATIONAL BACKGROUND

He completed elementary school in Zemun, and Mathematical High School in Belgrade in 1975. In 1980 he graduated from the Faculty of Civil Engineering, Department of Geodesy, with average mark of 8.0 and 10 for his diploma paper. In June 1982 he was elected for assistant professor-trainee at the Faculty of Civil Engineering, Department of Geodesy.

Dr Ivan Nestorov completed his post-graduate studies at the Faculty of Civil Engineering, Department of Geodesy, passing all exams with average mark 9.67. He defended his Master's thesis entitled "**An Analysis of Conditions And Possibilities Of Further Development Of Automation in Cartography**" in 1985. In June 1992 he defended his doctoral thesis entitled "**Methods of Cartographic Projection in Contemporary Environment**".

For his doctoral thesis Dr Ivan Nestorov was awarded the best doctoral dissertation defended in the 1991/1992 academic years by the Chamber of Commerce of Belgrade.

In 1982 Dr Ivan Nestorov visited Holland for specialization at post-graduate course C.2 at ITC (Enschede, Netherlands) and passed 9 professional exams, and in 1987 at Ohio State University in the USA at a doctoral course in the field of geographic information systems.

3. TEACHING CAREER

Since his appointment in 1982 at the Faculty of Civil Engineering, Department of Geodesy, under management of subject professors Dr Ivan Nestorov has conducted exercises in the following subjects:

- **Geodesy for the students of Civil Engineering department** – from academic year 1982/83 to academic year 1990/91
- **Cartography I** – VII semester, from academic year 1982/1983 to academic year 2000/2001
- **Cartography II** – VIII semester, from academic year 1982/1983 to academic year 2000/2001
- **Cartography III** – IX semester, from academic year 1982/1983 to academic year 1998/1999
- **Information Technologies In Cartography** - IX semester, from academic year 1999/2000 to academic year 2001/2002
- **Thematic Cartography** - IX semester, from academic year 1999/2000 to academic year 2001/2002

In 1993 Dr Ivan Nestorov wrote "*A Collection of Examination Tasks with Solutions from Mathematical Cartography*" (prepared for printing, reviewers Prof. Dr. Vojislav Milovanović, Prof. Dr Vladimir Mićić, revised in 1999). Although the collection was never printed, its manuscript is widely used by students in studying for their exams, because it is available both in the library and on the site of the Faculty of Civil Engineering.

Until his appointment for docent, Dr Ivan Nestorov taught and conducted exercises at the Military Academy KOV (1985/86) in the capacity of university lecturer of the subject ***Mathematical Cartography***, as well as lectured ***Mathematical Cartography*** and ***Information Technologies In Cartography*** at Special Post-Graduate Studies for geodesy services at Yugoslav Peoples Army (1992/1993).

For subjects ***Mathematical Cartography*** and ***Information Technologies In Cartography*** Dr Ivan Nestorov wrote unauthorized mimeographed texts in 1992.

After his appointment for docent Dr Ivan Nestorov taught the following subjects:

- **Cartography I** – VII semester, from academic year 1999/2000 to date
- **Cartography II** – VIII semester, from academic year 2000/2001 to date

In addition, in this period within his regular teaching assignment Dr Ivan Nestorov lectured the following facultative subjects:

- **Information Technologies In Cartography** - academic year 2000/2001
- **Thematic Cartography** - academic year 2000/2001

Dr Ivan Nestorov has participated, as a member of committee or as consultant in the preparation of about 30 diploma papers. In the period since his last appointment he was the mentor of a successfully defended master's thesis, a member of the committee for assessment and defense of a master's thesis, as well as a member for reception of subject for two doctoral dissertations.

4. SCIENTIFIC RESEARCH

Scientific research of Dr Ivan Nestorov involved writing and publication of papers in international and domestic scientific and professional magazines and proceedings, including reviews.

Scientific research of Dr Ivan Nestorov (based on the attached list of published papers) can be divided into the following fields:

- Mathematical cartography,
- Information technology in cartographic activities and spatial information systems

Dr Nestorov began his scientific research immediately upon graduation in 1980, when he published a paper entitled "*Application of a Mathematical and Statistical Method in Generalization of a Watercourse Network for a Part of the Velika Morava Basin*" in the Proceedings of the Institute of Geodesy. This paper presented experimental investigation of possibilities for automated generalization of watercourses, on the basis of mathematical formalization of generalization. This paper was one of the first experimental works in this field in our country.

The most important papers published by Dr Nestorov in international magazines with reviews are: " *CAMPREL: A New Adaptive Conformal Cartographic Projection"* published in the magazine ***Cartography and Geographic Information Systems****, paper "Оптимальные картографические проекции CAMPREL"* published in the magazine ***Геодезия и картография*** as well as the paper *"The New Adaptive Conformal Cartographic Projection and its Comparison with other Contemporary Projections under the*

Conditions of a Permanent Increase of the Quantity and Quality of Cartographic Data" read at the 17th Conference of International Cartographic Association.

In these papers Dr Nestorov presented methodology for finding his new conformal cartographic projection. In solving this problem, Dr Nestorov expounded his theory and introduced a mathematical tool by means of which he tried to find numerical solution of appropriate boundary problem for Poisson differential equation. Dr Nestorov's contribution in these papers are experimental results on the basis of which he proved that the newly obtained adaptive conformal projection, superior both in mini-max and in variation sense, reflects conformally the area under consideration better than the application of the most frequently used projections: Gauss-Krüger projection and Lambert projection. Comparing the new projection with other optimal projections (Urmay projection for European part of the former USSR, Frankić projection for Canada and Snyder projection for the USA), Dr Nestorov showed that the new projection yields better results in terms of arrangement and relations of extreme deformation values and that it can be used in digital and traditional cartography, for optimal presentation of Earth surfaces, its parts, continents and oceans, as well as other planets and their satellites.

The set of papers from the field of ***Mathematical Cartography*** includes also: "*Finding New Cartographic Projections through the Method of Solving Reverse Task of Mathematical Cartography*", "*Optimal Cartographic Projections and Criteria for Their Selection and Quality Assessment*", as well as his doctoral dissertation *Methods of Cartographic Projection in Contemporary Environment* where Dr Nestorov discusses the problem of finding new cartographic projections through the method of solving reverse task of mathematical cartography and the problem of formulation of criteria for quality selection and assessment of optimal cartographic projections.

Among the set of papers from the field of ***Information technology in cartography*** stands out Dr Nestorov's master's thesis "*An Analysis of the Present Conditions and Possibilities of Further Development of Automation in Cartography*" where the author systematically presents the status of information technology in cartography, showing devices, procedures and technology of digital map making and further directions in development of this scientific discipline. This paper was prepared within scientific research project "*Applied and Developmental Research in Automation and Implementation of New Technology and Technique in Geodesy for Civil Engineering, Water Resources Management, Town Planning and Public Authorities and Government Organization of the Republic of Serbia*" financed by the Republican Science Directorate of Serbia. This set also includes "*Making Thematic Maps by means of HOROP Cartographic Package*" and "*Deformations Elimination of Scanned Large Scale Maps*". The former presents some solutions in the making of digital thematic maps by means of quantitative methods, while the latter presents several mathematical models for removing deformations of scanned large scale maps with implementation of appropriate software.

The paper "*The Role of Digital Cartography in Spatial Information Systems*" has the character of a discussion, establishing the role of digital cartography in geographic information systems.

In the paper "*Urban Rent Calculation And Paying - Subsystem Of The City Information System*" Dr Nestorov together with a group of authors presents a solution for implementation of appropriate information system in the management of city space, with special reference to the subsystem for calculation and charge of payment for the use of city land.

In the paper "*Application Of IBM/PC Computers In The Preparation Of Land Development Database*" the author gave a proposal for the structure of land development (consolidation, redistribution) database for the "new" and "old" status, suggestions for its software implementation, as well as advantages and effects of such database in exploitation.

The monograph "*New Optimal Cartographic Projections*" is Dr Nestorov's revised doctoral dissertation published by the Andrejević Foundation.

In the period after his appointment for the post of docent, Dr Nestorov focused his interest towards the study and implementation of modern methods of surveying

infrastructural corridors and preparation of spatial database. These activities resulted in his papers "*A System for Locating and Gathering Data on Elements of Railway Infrastructure*", "*Applying Digital Raster Databases in Cartography*", as well as in his study "*Preliminary Study in Spatial Definition of Railway Infrastructure Facilities*"

5. PROFESSIONAL WORK

Dr Nestorov's professional work is presented in the attached list of papers. From this list it is to be seen that Dr Ivan Nestorov worked in various areas of geodesy and cartography. A considerable number of professional works Dr Nestorov has carried out at the Faculty of Civil Engineering in Belgrade.

It is to be pointed out that Dr Nestorov carried out a great deal of professional activities in the field of information technologies in cartography and geodesy, either in the form of program packages, development of projects, implementation of new surveying methods in our country or trough his participation in the development of spatial information systems.

In the period after his appointment for docent, Dr Nestorov has been in charge of a series of economic projects the most interesting of which are: preparation of ortho-photo maps for several cities on the basis of aerophotogrammetric and satellite images, preparation of spatial database for the requirements of planning of cells for mobile telephony, laser altimetric surveying of infrastructural corridors from helicopter, activities on the renewal of cadastral maps of part of the municipality of Vršac.

6. ACTIVITIES IN PROFESSIONAL ASSOCIATIONS AND PUBLIC ACTIVITY

In the period since his coming to the Faculty of Civil Engineering in 1982, Dr Nestorov has been a member of several committees at the Institute for Geodesy and the President of Financial Commission and Commission for Procurement of Equipment.

In addition, Dr Nestorov was a member of Financial Commission and Commission for Publishing of the Faculty of Civil Engineering.

In the period 1987-1989 Dr Nestorov was Secretary of the Department for Photogrammetry and Cartography, and in the period 1985-1987 President of a branch office of Belgrade Society of Geodesic Engineers and Surveyors at the Institute for Geodesy.

Dr Nestorov was a member of the following international and domestic scientific and professional bodies (until his appointment to the post of docent).

- Member of **General Assembly of International Cartographic Association** (ICA), Barcelona, 1995;
- Member of **ICA Commission on Map Use**, in the period 1995-1999;
- Member of **ICA Commision on Standards for the Transfer of Spatial Data**, in the period 1995-1999;
- Member of **ISO/TC 211/WG3** workgroup - Geospatial Data Administration;
- Member of the Board of Cartography of the Society of Geodesic Engineers and Surveyors of Yugoslavia, in the period 1996-2000;
- President of the Board of Directors of Enterprise for Cartography of Geokarta, d.o.o., since 2000 to date;
- President of **Yugoslav Association of Cartographers**, in the period since 2000 to date;
- Member of Editorial Board of **Geodetic Journal**, since foundation;
- Member of **ICA Commision on Education and Training**, since 2003;
- Member of **ICA Commision on Map Projection**, since 2003.

7. ATTACHMENTS

7.1 PAPERS FOR ACQUISITION OF SCIENTIFIC AND TEACHING QUALIFICATIONS

Methods of Cartographic Projection in Contemporary Environment: doctoral dissertation / **I. Nestorov** – Belgrade, 1992, 213 pages. University of Belgrade, Faculty of Civil Engineering, Department of Geodesy

An Analysis of Conditions And Possibilities Of Further Development Of Automation in Cartography: master's thesis / **I. Nestorov** – Belgrade, 1985, 144 pages. University of Belgrade, Faculty of Civil Engineering, Department of Geodesy

7.2 TEXTBOOKS

A Collection of Examination Tasks with Solutions from Mathematical Cartography, / **I. Nestorov** – Belgrade, 1993, 77 pages (prepared for printing with positive reviews, reviewers Prof. Dr. V. Milovanović, Prof. Dr V. Mićić)

Mathematical Cartography / V. Jovanović, Belgrade, Military Geographic Institute, 1983. Enclosure: Tables for processing and computation of cartographic projections / **I. Nestorov**, pp. 541-556

Mathematical Cartography / I. Nestorov – Belgrade: written lectures, 1993, 80 pages.

Information Technology in Cartography / I. Nestorov – Belgrade: written lectures, 1993, 65 pages.

7.3 SCIENCE BOOKS AND MONOGRAPHS, CHAPTERS IN BOOKS AND MONOGRAPHS, REVIEWED SCIENTIFIC ARTICLES

New Optimal Cartographic Projections / I. Nestorov, Belgrade, Andrejević Foundation, Belgrade, 1996, 107 pages

Russian-Serbian Technical Dictionary / M. Slavić, Lj. Nestorov, I. Nestorov**,** Belgrade: Tehnička knjiga, 1997, 417 pages.

7.4 PUBLISHED PAPERS OF INTERNATIONAL IMPORTANCE

A1 – Original Scientific Papers

CAMPREL: A New Adaptive Conformal Cartographic Projection / I. Nestorov // Cartography and Geographic Information Systems, Vol. 24, No. 4, October 1997, pp. 221-227.

Оптимальные картографические проекции CAMPREL / И. Несторов // Геодезия и картография, Но. 11., 1996, pp. 43-47.

Urban Rent Calculation And Paying - Subsystem Of The City Information System / I. Nestorov, **M. Miladinović, S. Andrić** // **International Conference: Architecture and Urbanism at the Turn of the III Millennium, 1996. Belgrade pp. 67-73**.

The New Adaptive Conformal Cartographic Projection and its Comparison with other Contemporary Projections under the Conditions of a Permanent Increase of the

Quantity and Quality of Cartographic Data / I. Nestorov // Proceedings of 17th International Cartographic Conference, 1995. Barcelona, pp. 2700-2706.

7.5 PUBLISHED PAPERS OF INTERNATIONAL IMPORTANCE

A1 – Original Scientific Papers

Making Thematic Maps by means of HOROP Cartographic Package / **I. Nestorov** // Geodesic Service, No. 71, 1995, pp. 12-21

Deformations Eliminationa of Scanned Large Scale Maps / **I. Nestorov,** P. Damjanović // Proceedings of 2nd Yugoslav Seminar on Application of CAD Technology - CAD Forum, 1995. Novi Sad, pp. 303-310.

Application of a Mathematical and Statistical Method in Generation of a Watercourse Network for a Part of the Velika Morava Basin / **I. Nestorov** // Proceedings of the Institute of Geodesy No. 19, 1980, pp. 155-179.

A2 Reviews

Applying Digital Raster Databases in Cartography / I. Nestorov // Proceedings of the Scientific Conference on Contemporary Trends in Cartography, 2001, Faculty of Geography at University of Belgrade, pp. 38-54.

A System for Locating and Gathering Data on Elements of Railway Infrastructure // S. Jovanović, **I. Nestorov** // Proceedings of the First Counseling: Assessment of the Conditions, Maintenance and Improvement of Civil Engineering Structures, 1999, Tara.

The Role of Digital Cartography in Spatial Information Systems / **I. Nestorov** // Proceedings of the First Yugoslav Conference on GIS Technologies – GIS, status and perspectives, 1996, Belgrade, pp. 217-221.

Finding New Cartographic Projections through the Method of Solving Reverse Task of Mathematical Cartography / I. Nestorov // Geodesic Service, No. 71, 1995, pp. 21-35.

Optimal Cartographic Projections and Criteria for Their Selection and Quality Assessment / **I. Nestorov** // Geodesic Service, No. 69, 1994, pp. 13-26.

7.6 PAPERS PUBLISHED IN EXCERPTS

Application Of IBM/PC Computers In The Preparation Of Land Development Database / **I. Nestorov** // Информационнуе систему дла территории жилух и благоустројственнух фондов населенух пунктов, 1988. Sofia.

Deformations Elimination of Scanned Large Scale Maps / **I. Nestorov** // Symposium on Computer Sciences and Informatics, YU INFO '95, 1995, Brezovica.

7.7 SCIENTIFIC RESEARCH PROJECTS

Applied and Developmental Research in Automation and Implementation of New Technology and Technique in Geodesy for Civil Engineering, Water Resources Management, Town Planning and Public Authorities and Government Organization of the Republic of Serbia // Republican Science Community, 1980-1984.

Data Processing of High Accuracy Levelling of Serbia, Kosovo and Macedonia / Republican Surveying Office of Serbia, Republican Surveying Office of Macedonia, 1983.1988.

Contemporary Problems in Building Structures, Materials and Environments in Civil Engineering // Republican Science Community, 1986-1990.

7.8 STUDIES

Preliminary Study in Spatial Definition of Railway Infrastructure Facilities / S. Jovanović, **I. Nestorov**, D. Komatina // Transportation Institute CIP, Belgrade, 1999, 165 pages.

Preliminary Study on Development of Information System of the City of Ruma / M. Miladinović, S. Andrić, **I. Nestorov** // Fund for Building Land of the City of Ruma, Belgrade, 1994. 96 pages.

Study on Development of Information System on Agricultural Land of the Republic of Serbia / M. Miladinović and others, Republican Fund for Protection, Use, Improvement and Development of Agricultural Land, Belgrade, 1993, 570 pages.

7.9 PROFESSIONAL WORKS

VISLA software package – program package for simulation of multilayered aquifers (with V. Filipović), Belgrade, 1978.

KARTODINT software package - program package for automated generation of thematic maps, 1985.

TOPOPLAN software package - program package for automated generation of topographic bases, 1985.

Cartographic and cartometric base for the requirements of TV converter, repeater stations and directed radio-relay connections (with V. Milovanović), 1984.

Deformation measurements for VMA facility (with S. Kontić, T. Ninkov and V. Raičković), 1984.

Deformation measurements for the building of Algerian Embassy (with S. Kontić, T. Ninkov and V. Raičković), 1984.

Automated data processing and their graphic interpretation for preparation of topographic bases for structures (in the period 1984-1987):

- Institute Mihailo Pupin
- Belgrade Airport – surveying works as the basis of spatial information system
- National Theatre in Belgrade
- Saint Sava Orthodox Cathedral, Vračar Plateau
- Institute of Physics, Zemun
- Agrooprema Business Office
- Rakovica Sports Center
- Krašići Olive Grove Holiday Houses
- Apatin Shipbuilding Yard

- University City, New Belgrade
- Zvezdara Observatory

Development of software for automated processing of digitalized data and their graphic interpretation for HAL (High Accuracy Levelling) on the territory of Serbia, 1987.

KOMBAZA software package - program package for automated management of land development database, 1988.

KATAS 89 software package - program package for automated management of cadastre database of real property, 1989.

Software package for development of topographic bases and computation of plot areas for the area of Master Town Plan "Žabljak 89" (with M. Čvorović), 1989.

Preparation of digital topographic documentation for the "Project of Drainage of Galovica Basin", organized at the Jaroslav Černi Institute (with V. Milovanović), 1990.

Surveying data of the existing conditions for the structure of NIP Politika "Foundations of Offset Rotation – Krnjača Plant" in horizontal and vertical elevation and corresponding interpretation, 1993.

Development of a digital model of land structures for golf course "TSU Country Club", Japan, within the project "Golf Vision System", 1993.

Information system for charging payment for the use of city land (with M. Miladinović and S. Andrić), Fund for Development Land, Ruma, 1994.

Automated generation of site layouts for plots in the building district for the city of Ruma (scale 1:1000 and 1:2500), Public Enterprise for Building Lots and Roads, Ruma, 1996.

Preparation of digital orthophoto maps in scale 1:1000 for the area of Belgrade Center Railway Station, Company for the Construction of Railway Node, Belgrade, 1998.

Implementation of information system for urban rent calculation and payment for the use of development land (with M. Miladinović, S. Andrić and S. Mirić), Public Enterprise for Development Land, Utilities and Roads, Inđija, 1998.

Preparation of digital orthophoto map for development land area of the town of Inđija, scale 1:1000, Public Enterprise for Development Land, Utilities and Roads, Inđija, 1999.

Surveying works on examination of sag of the structure of a part of the printing hall, Politika in Krnjača, during installation of equipment (with S. Ašanin), Belgrade, 2002.

Project Manager for the following projects, in the period 2001-2003:

Preparation of spatial database for the requirements of planning of cells for mobile telephony of Serbia for urban areas: Belgrade, Novi Sad and Niš. Telekom Serbia a.d. Belgrade

Preparation of digital orthophoto maps, scale 1:5000 based on satellite pictures: Veliki Šiljegovac, Ribarska Banja, Izletište Jastrebac, Jezero Ćelije, Office for Town Planning and Building JP "Kruševac", Kruševac, 2002.

Preparation of digital orthophoto maps for the area of town development land of the municipality of Stara Pazova, scale 1:2500 and preparation of digital orthophoto maps for the

area of political municipality of Stara Pazova, scale 1:5000, Public Enterprise for Development Land and Building of the municipality of Stara Pazova "Gea-Plan", Stara Pazova, 2002.

Implementation of information system for urban rent calculation and payment for the use of development land of the municipality of Stara Pazova, Public Enterprise for Development Land and Building of the municipality of Stara Pazova "Gea-Plan", Stara Pazova, 2002.

Preparation of digital orthophoto maps for the area of town development land of the municipality of Vršac, scale 1:1000, Public Enterprise for Building, Planning and Development of the town and the area of the municipality of Vršac "Varoš", Vršac, 2002.

Laser altimetric imaging mapping and profiling from helicopter by means of FLI-MAP technology for approximately 300 km of highways in Serbia, Republic of Serbia Road Directorate, Belgrade 2003.

Laser altimetric imaging mapping and profiling from helicopter by means of FLI-MAP technology for approximately 60 km of long distance power lines in Serbia, Elektroistok, Belgrade 2003.

Preparation of digital orthophoto maps for the area of town development land of the municipality of Užice, scales 1:1000, 1:2500, and 1:5000, Directorate for Town Planning and Building of the city of Užice, Užice, 2003.

Preparation of digital orthophoto maps for the area of town development land of the municipality of Bajina Bašta, scales 1:1000, 1:2500, and 1:5000, Directorate for Town Planning and Building of the city of Bajina Bašta, Bajina Bašta, 2003.

Preparation of project for renewal of surveying, cadastre of real property and cadastre of utilities, Public Enterprise for Development Land and Building of the municipality of Bačka Palanka "Standard", Bačka Palanka, 2003.

Execution of works on the renewal of cadastral maps for the location of "Gudurički Put" (total 70 ha), Public Enterprise for Building, Planning and Development of the town and the area of the municipality of Vršac "Varoš", Vršac, 2003.