6TH ICT INNOVATIONS
CONFERENCE 2014

9 - 12 SEPTEMBER OHRID, R. MACEDONIA

ICT Innovations 2014

CONFERENCE GUIDE

Welcome

Welcome to the 6th ICT Innovations Conference 2014, that takes place in Ohrid, Macedonia, from the 9th-12th September 2014. The ICT Innovations conference is a framework where academics, professionals, and practitioners interact and share their latest results and interests related to basic and applied research in ICT. The organizer of the conference is the Association for Information and Communication Technologies (ICT-ACT) that serve its mission to support the development of information and communication technologies in Macedonia, the Balkan region and beyond, especially in the area of research and application of innovative technologies.

We are delighted to have created a programme that includes long papers, short papers, and posters along with three keynote lectures. Three workshops are also organized as part of the ICT Innovations 2014 conference activities: MLLS - Machine Learning in Life Sciences, FUPOL - ICT Tools for Future Policy Modelling and MAESTRA - Learning from Massive, Incompletely Annotated, and Structured Data.

This year the conference is held in the Faculty of Tourism and Hospitality in Ohrid. Aside from the academic content, social interactions and relationship building are a key aspect of a good conference. There are three main social events, a welcome cocktail at Cuba Libre Beach&Bar on the September 9th, a conference dinner in Hotel Sileks on September 10th, and a banquet lunch on September 11th in the main FTU - Room of the Faculty of Tourism and Hospitality in Ohrid (the main Venue of the conference).

We sincerely hope that the carefully crafted program that we will put together, the scientific discussions that the conference will hopefully stimulate, and your additional activities in Ohrid and its surroundings, will make participation in ICT Innovations Conference 2014 a valuable and a memorable experience.

Ana Madevska Bogdanova
Dejan Gjorgjevikj
Conference chairs

General Information

ICT Innovations 2014 is a parallel track conference and the oral sessions will take place in three lecture rooms at the Faculty of Tourism and Hospitality (FTU). The principal location is the main lecture Hall of FTU (amphitheatre) on the ground floor, which will host the plenary sessions, the keynote lectures (except for the keynote on September 10th morning that will take place at the Metropol Lake resort – organized transport will be provided).

The main lecture Hall of FTU will also host the sessions marked as Hall 1 (FTU). Hall 2 (FTU) and Hall 3 (FTU) are lecture rooms on FTU ground floor (will be clearly marked) along the corridor on the right of the main entrance. The conference registration desk will be manned throughout the conference and is situated just outside the main lecture hall.

All presenters should go to their session's room 15 minutes before their oral session starts, and report to the session chair. The session chairs are named in your conference schedule. Each oral presentation will be allocated 20 minutes (15 for the talk and 5 for questions). It is very important that presenters keep to their time-slots to avoid any cascading delays in the conference schedule. The posters will be displayed in main (entrance) hall of FTU on September 11th.

Please ware the name-tag you have received at the registration on all conference events.

The coffee during the coffee breaks and the buffet lunch on September 11th will be served in the main hall of FTU.

There will be wireless network facilities provided during the conference. Details will be provided at the FTU hall entrance.

For any general information, please do not hesitate to ask any of the registration desk attendees or any of the volunteers. Volunteers will be easy to identify because they will be wearing green (organizational matters) and yellow (technical issues) ICT Innovations 2014 T-shirts.

Entertainment

The music part is covered by the Musical Academy from University "Goce Delčev" –Štip. We will enjoy Jazz-Rock session at the Welcome cocktail (Cuba Libre Beach&Bar) and Macedonian traditional folk music and dances at the Conference Dinner (Hotel Sileks).
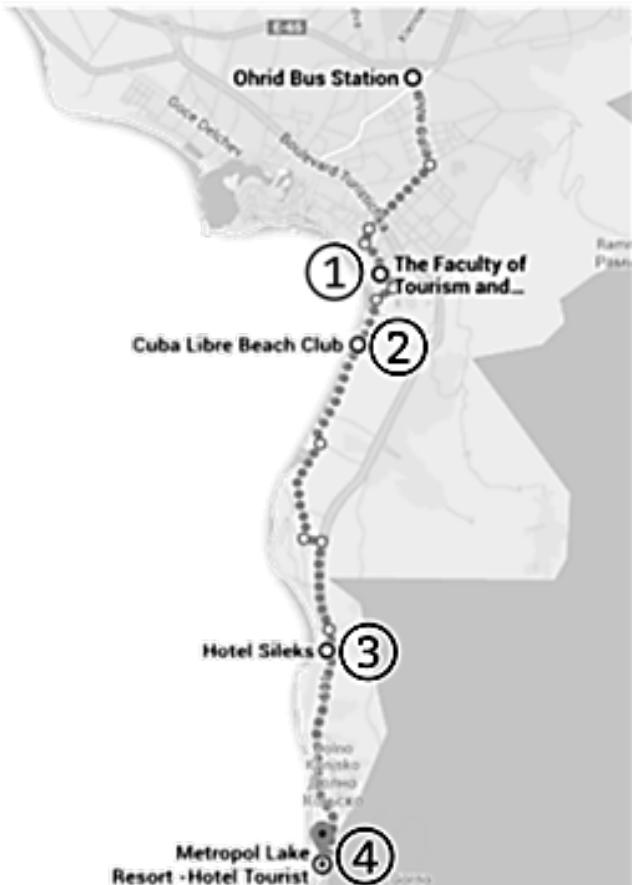
Social Events

① Faculty of Tourism (FTU)   ③ Hotel Sileks

② Cuba Libre Beach Bar   ④ Hotel Metropol Lake Resort

DAY 1 - TUESDAY (9.09)

18:00 - 20:00
Welcome cocktail at
Cuba Libre Beach Bar

DAY 2 - WEDNESDAY (10.09)

11:00 - 11:30
Official opening
Hotel Metropol Lake Resort

20:00
Conference dinner at
Hotel Sileks

DAY 3 - THURSDAY (11.09)

17:00 - 19:00
Guided tour to Ohrid
Meeting place FTU Hall

The transport to **Metropol Lake Resort** will be organized by bus (about 10 minute drive).

Organized transport to the conference official dinner (at **Hotel Sileks** and back to **Ohrid**) will also be provided.

Conference Programme

Tuesday (09.09.2014)

12:00 - 17:00	Faculty of Tourism and Management (FTU), Registration
17:00 - 18:00	Main lecture hall (FTU) **Keynote lecture** Mirjana Ivanović "Agreement Technologies and Multi-Agent Environments" Chairs: Ana Madevska Bogdanova, Dejan Gjorgjevikj
18:00 - 20:00	Welcome cocktail at Cuba Libre Beach&Bar (*10 minute walk from FTU*)

Wednesday (10.09.2014)

8:30 - 10:30	Hall 1 (FTU) **AI**	Hall 2 (FTU) **SN**	Hall 3 (FTU) **HPC**
10:30 - 11:00	Transport to Metropol Lake Resort (*BUS*)		
11:00 - 11:30	Conference Hall of Metropol Lake Resort **Official opening**		
11:30 - 12:30	Conference Hall of Metropol Lake Resort **Keynote lecture** (ADBIS / ICT Innovations conferences) Joao Gama "Challenges in Learning from Streaming Data" Chairs: Dejan Gjorgjevikj, Margita Kon-Popovska		
12:30 - 13:00	Transport to Ohrid (*BUS*)		
13:00 - 15:00	Lunch		
15:00 - 16:00	Main lecture hall (FTU) **Keynote lecture** Damir Kalpić "A Review of Obstacles Observed while Applying Optimisation and Information Systems in Practice" Chairs: Ana Madevska Bogdanova, Dejan Gjorgjevikj		
16:00 - 16:40	Main lecture hall (FTU) **Poster highlights** Chairs: Dejan Gjorgjevikj, Ana Madevska Bogdanova		
16:40 - 17:00	FTU hall Coffee break		
17:00 - 18:30	Hall 1 (FTU) **E**	Hall 2 (FTU) **S**	Hall 3 (FTU) **N**
20:00 – 23:30	Hotel Sileks Conference dinner (*transport by bus to Hotel Sileks and back to Ohrid will be provided*)		

Thursday (11.09.2014)

9:00 - 11:00	Hall 1 (FTU) **C**	Hall 2 (FTU) **I**	Hall 3 (FTU) **WS: MLLS 1**
11:00 - 11:30	FTU hall Coffee break		
11:30 - 12:30	FTU hall Poster session 1		
12:30 - 14:00	FTU hall Buffet lunch (*Complementary lunch for all conference participants*)		
14:00 - 15:00	FTU hall Poster session 2 / Coffee		
15:00 - 17:00	Hall 1 (FTU) **WS: MAESTRA**	Hall 2 (FTU) **WS: FUPOL**	Hall 3 (FTU) **WS: MLLS 2**
17:00 - 19:00	Guided tour to Ohrid Meeting place: FTU hall		

Friday (12.09.2014)

8:30 - 10:30	Hall 1 (FTU) **PR**	Hall 2 (FTU) **M**
10:30 - 11:00	Main lecture hall (FTU) Conference closing	
11:00 - 11:30	FTU hall Farewell coffee	
11:30 - 15:30	Facultative visit to Monastery of Saint Naum (1)	

(1) An organized transportation to the St. Naum Monastery (and back to Ohrid) is free for all conference participant that will register for the visit of St. Naum.

Session Programme

AI - Artificial Inteligence, Wednesday (10.09.2014) 8:30 - 10:30 Hall 1 (FTU)

Chairs: **Andrea Kulakov, Vladimir Trajkovik**

1. **A Tracking System for the Recognition of Long Term Events in Surveillance Videos**
   Ilkay Ulusoy, Yousef Rezaitabar and Nihan Çiçekli

2. **Exploratory analysis of communities in co-authorship networks: A case study**
   Miloš Savić, Mirjana Ivanović, Miloš Radovanović, Zoran Ognjanović, Aleksandar Pejović and Tatjana Jakšić Krüger

3. **Sentiment analysis of movie reviews written in Macedonian language**
   Vasilija Uzunova and Andrea Kulakov

4. **Language-Independent Sentiment Polarity Detection in Movie Reviews: A Case Study of English and Spanish**
   Jelena Graovac and Gordana Pavlović-Lažetić

5. **Saliency Anlysis for High Resolution Satellite Images with Challenging Contents**
   Poyraz Hatipoğlu, Örsan Aytekin, İlkay Ulusoy and Uğur Halıcı

6. **Human perception of emotions in a model for human-robot interaction**
   Vesna Kirandziska and Nevena Ackovska

SN - **Social Networks,** Wednesday (10.09.2014) 8:30 - 10:30 Hall 2 (FTU)

Chairs: **Smilka Janeska Sarkanjac, Ivan Chorbev**

1. **Advanced User Profiles for the SmartSocial Platform: Reasoning upon Multi-Source User Data**
   Vanja Smailovic, Darko Striga and Vedran Podobnik

2. **Collecting and Analyzing Data from E-Government Facebook Pages**
   Ivana Grujić, Sanja Bogdanović-Dinić and Leonid Stoimenov

3. **Clustering of tweets from popular athletes**
   Filip Andonovski and Ivan Chorbev

4. **Social Network Analysis as a Suitable Tool for Business Process Reengineering**
   Mimoza Bogdanoska Jovanovska, Blagoj Ristevski and Violeta Manevska

5. **Smart, Personalized and Social IPTV based on currently provided infrastructure**
   Kostadin Mishev, Vlatko Nikolovski and Igor Mishkovski

6. **Behavioral Attribute Driven System for Smart Targeting**
   Snezana Cerepnalkovska Dukovska, Smilka Janeska Sarkanjac and Ljupcho Antovski

HPC - High-performance computing, Wednesday (10.09.2014) 8:30 - 10:30 Hall 3 (FTU)

Chairs: **Anastas Mishev, Sonja Filiposka**

1. **Simulation of L2 Cache Separation Impact in CPU Performance**
   Erion Çano
2. **Optimizing ELARS Algorithms using NVIDIA CUDA Heterogeneous Parallel Programming Platform**
   Vedran Miletić, Martina Holenko Dlab and Nataša Hoić-Božić
3. **Opportunities and Challenges for Green HPC**
   Sonja Filiposka, Anastas Mishev and Carlos Juiz
4. **Modeling the Speedup for Scalable Web Services**
   Sasko Ristov, Marjan Gusev and Goran Velkoski
5. **Magnetic Response Properties of Aqueous Aluminium(III) Ion: A Hybrid Statistical Physics – Quantum Mechanical Approach Implementing the Map-Reduce Computational Technique**
   Bojana Koteska, Anastas Mishev and Ljupco Pejov
6. **Lambda Architecture for Real Time Big Data Analytic**
   Zirije Hasani, Margita Kon-Popovska and Goran Velinov

E - Education, Wednesday (10.09.2014) 17:00 - 18:30 Hall 1 (FTU)

Chairs: **Vladimir Trajkovikj, Sime Arsenovski**

1. **A Comparison and Integration of Ontologies Suitable for Interoperability Extension of SCOR Model**
   Srdja Bjeladinovic and Zoran Marjanovic
2. **The Process of Continuous Evaluation in Higher Education Using Competences - In Case of Competence Software in University of Prishtina**
   Isak Shabani, Fatos Halilaj and Betim Cico
3. **A study on implementation and usage of web based programming assesment system: Code**
   Tomche Delev and Dejan Gjorgjevikj
4. **Computational Module as a Tool for Financial Viability Analysis in Decision Making Process in Private University Institutions**
   Mence Ivanovska, Leonid Djinevski and Sime Arsenovski

S - Software, Wednesday (10.09.2014) 17:00 - 18:30 Hall 2 (FTU)

Chairs: **Sonja Filiposka, Ivan Chorbev**

1. **Automated Synthesis of Initial Conceptual Database Model Based on Collaborative Business Process Model**
   Drazen Brdjanin, Goran Banjac and Slavko Maric
2. **Development of Efficient Traffic Monitoring Model for Vehicle Area Network**
   Kumar Sridharamurthy and Varaprasad Golla
3. **Model-Based Engineering in Real-Time Embedded Systems: Specifying Timing Constraints**
   Damjan Temelkovski and Ljerka Beus-Dukic
4. **Implementing continuous integration in a web based medical software**
   Martin Cvetkovski and Ivan Chorbev

N - Networks, Wednesday (10.09.2014) 17:00 - 18:30 Hall 3 (FTU)

Chairs: **Dejan Spasov, Dimitar Trajanov**

1. **Cooperation among non-identical oscillators connected in different topologies**
   Miroslav Mirchev, Lasko Basnarkov and Ljupco Kocarev
2. **Efficient attacks in Industrial Wireless Sensor Networks**
   Spase Stojanovski and Andrea Kulakov
3. **Advanced Mobility Management System for Wireless Mesh Networks Based on Pointer**
   Vasantha M and Varaprasad Golla
4. **Modeling and Simulation of Routing Protocols in the Cloud**
   Igor Jakimovski and Dejan Spasov

C - Cryptography, Thursday (11.09.2014) 9:00 - 11:00 Hall 1 (FTU)

Chairs: **Verica Bakeva, Tolga Yalcin**

1. **Combined AES + AEGIS Architectures for High Performance and Lightweight Security Applications**
   Furkan Sahin, Tolga Yalcin and Fatih Ugurdag

2. **Pseudo random sequence generators based on the parastrophic quasigroup transformation**
   Verica Bakeva, Vesna Dimitrova and Mile Kostadinoski

3. **Error-Detecting Code using Linear Quasigroups**
   Natasha Ilievska and Danilo Gligoroski

4. **Improving the Decoding Complexity of Turbo Codes**
   Dejan Spasov

5. **Some Cryptanalysis of the Block Cipher BCMPQ**
   Vesna Dimitrova, Mile Kostadinoski, Zlatka Trajcheska, Marija Petkovska and Damjan Buhov

I - Internet, Thursday (11.09.2014) 9:00 - 11:00 Hall 2 (FTU)

Chairs: **Lasko Basnarkov, Sonja Filiposka**

1. **Open Financial Data from the Macedonian Stock Exchange**
   Bojan Najdenov, Hristijan Pejchinoski, Kristina Cieva, Milos Jovanovik and Dimitar Trajanov

2. **Evaluating an ordered list of recommended physical activities within health care system**
   Igor Kulev, Elena Vlahu-Gjorgievska, Saso Koceski and Vladimir Trajkovik

3. **Nokia Windows Mobile's Power Consumption Measurements and Analysis**
   Luan Ruçi, Luan Karçanaj and Olimpjon Shurdi

4. **VEO: an Ontology for CO2 Emissions from Vehicles**
   Bojan Najdenov, Milos Jovanovik and Dimitar Trajanov

5. **Simulated PM10 Particles in 3 location in Skopje using HYSPLIT model**
   Maja Ivanova and Kosta Mitreski

6. **An Implementation Of A NoSQL Based Web Crawler For Image Storage And Retrieval**
   Bane Georgievski, Veno Pachovski and Biljana Stojcevska

Workshop: MLLS 1 - Machine Learning in Life Sciences, Thursday (11.09.2014) 9:00 - 11:00 Hall 3 (FTU)

Chairs: **Michał Woźniak, Bartosz Krawczyk**

1. **Hypertension Type Classification Using Hierarchical Ensemble of One-Class Classifiers for Imbalanced Data**
   Bartosz Krawczyk and Michał Woźniak

2. **Handling Label Noise in Microarray Classification with One-Class Classifier Ensemble**
   Bartosz Krawczyk and Michał Woźniak

3. **Migraine Diagnosis Support System Based On Classifier Ensemble**
   Konrad Jackowski, Dariusz Jankowski and Dragan Simic

4. **Novel Methodology for CRC Biomarkers Detection with Leave-one-out Bayesian Classification**
   Monika Simjanoska and Ana Madevska Bogdanova

5. **New Representation of Information Extracted from MRI Volumes Applied to Alzheimer's Disease**
   Katarina Trojacanec, Ivan Kitanovski, Ivica Dimitrovski and Suzana Loshkovska and Alzheimer's Disease Neuroimaging Initiative

Workshop: MLLS 2 - Machine Learning in Life Sciences, Thursday (11.09.2014) 15:00 - 17:00 Hall 3 (FTU)

Chairs: **Michał Woźniak, Bartosz Krawczyk**

1. **Computer-Aided Diagnosis of Malign and Benign Brain Tumors on MR Images**
   Emre Dandıl, Murat Çakıroğlu and Ziya Ekşi

2. **Robustness of the Gray Code Arrangements of the Genetic Code in Mitochondria**
   Dragan Bosnacki, Huub ten Eikelder, Marieke Maanders and Peter Hilbers

3. **Novel Gene Ontology Based Distance Metric for Function Prediction via Clustering in Protein Interaction Networks**
   Kire Trivodaliev, Ilinka Ivanoska, Slobodan Kalajdziski and Ljupco Kocarev

4. **Method for Determination of the Protein Functions Based on the Global and Local Characteristics of the Structure**
   Georgina Mirceva

5. **Frequent itemset mining for discovering co-occurring genomic tracks**
   Boris Simovski and Ana Madevska-Bogdanova

Workshop: MAESTRA - Learning from Massive, Incompletely annotated, and Structured Data, Thursday (11.09.2014) 15:00 - 17:00 Hall 1 (FTU)

Chairs: **Ivica Dimitrovski, Gjorgji Madjarov**

1. **Content Based Retrieval of MRI in the Context of Alzheimer's Disease**
   Katarina Trojacanec
2. **Medical Image Retrieval using Multimodal Data**
   Ivan Kitanovski
3. **Building a Twitter Analysis and Visualization Tool – TweetViz**
   Dario Stojanovski
4. **Deep Learning in Image Understanding**
   Gjorgji Strezoski
5. **Android Application for Flower Recognition**
   Aleksandar Stojmenski

Workshop: FUPOL - ICT tools for Future Policy Modelling, Thursday (11.09.2014) 15:00 - 17:00 Hall 2 (FTU)

FUPOL Chairs: **Marjan Gusev, Peter Sonntagbauer**

1. **Forecasting E-Participation Success**
   Susanne Sonntagbauer and Peter Sonntagbauer
2. **Applying FUPOL in City of Zagreb**
   S. Tomic Rotim
3. **Results of FUPOL Training Sessions in pilot cities**
   M. Moise, D. Paul Pop
4. **Applying FUPOL social media tools in City of Skopje**
   Avukatov, M. Ringov, L. Markic
5. **Urban Policy Modelling: A Generic Approach**
   Marjan Gushev, Goran Velkoski, Ana Guseva and Sasko Ristov

PR - Pattern recognition, Friday (12.09.2014) 8:30 - 10:30 Hall 1 (FTU)

Chairs: **Igor Trajkovski, Gjorgji Madjarov**

1. **Stock market trend prediction based on the LS-SVM model update algorithm**
   Ivana Marković, Miloš Stojanović, Miloš Božić and Jelena Stanković

2. **Automatic Movie Posters Classification into Genres**
   Marina Ivasic-Kos, Miran Pobar and Ivo Ipsic

3. **Robustness of Speech Recognition System of Isolated Speech in Macedonian**
   Daniel Spasovski, Goran Peshanski, Gjorgji Madjarov and Dejan Gjorgjevikj

4. **The Influence the Training Set Size Has on the Performance of a Digit Speech Recognition System in Macedonian**
   Goran Peshanski, Daniel Spasovski and Gjorgji Madjarov

5. **Design optimization of power objects based on Constrained non-linear minimization, Genetic algorithms and Differential Evolution Algorithms**
   Rasim Salkoski and Ljubinka Gjergjeska

6. **Linear programming approach for online advertising**
   Igor Trajkovski

M - Medical, Friday (12.09.2014) 08:30 - 10:30 Hall 2 (FTU)

Chairs: **Ivica Dimitrovski, Andrea Kulakov**

1. **Employing Personal Health Records for Population Health Management**
   Ana Kostadinovska, Gert-Jan de Vries, Gijs Geleijnse and Katerina Zdravkova

2. **Using the mutual exclusion protocol for safety in the area of robotic surgery**
   Luzie Schreiter, Ammar Mohammed, Joerg Raczkowsky and Heinz Woern

3. **Text-based Medical Image Retrieval using Query Modification Methods**
   Ivan Kitanovski, Katarina Trojacanec, Ivica Dimitrovski and Suzana Loskovska

4. **Efforts in using 3d printing and scanning in medicine**
   Aleksandar Stojmenski, Boban Joksimoski and Dragan Mihajlov

5. **Biomedical Image Processing of Magnetic Resonance Imaging of the Pathological Human Brain: An Intensity-Curvature Based Approach**
   Carlo Ciulla, Ustijana Reckoska Shikoska, Dijana Capeska Bogatinoska, Filip Risteski and Dimitar Veljanovski

6. **Tumor detection in manually selected regions of MRI images**
   Petre Lameski, Darko Kulakov, Eftim Zdravevski and Andrea Kulakov

Posters

1. **A New Networked Filter Method for Robust Stability Analysis of Software Defined Networks**
   Jian-Qin Liu and Wuyi Yue

2. **Hopfield Neural Network for Dynamic Routing Based on Multi Parameters**
   Nenad Kojic, Irini Reljin, Branimir Reljin

3. **Thermal transition in nonlinear lattices**
   Mihaela Carina Raportaru

4. **The Analyses of Relationship Between the Country`s Level of Development and Digital Literacy through the Digital Natives Activity in Serbia**
   Nikola Slavkovic, Ana Savic, Natalija Vugdelija

5. **Risk Prediction According to Basel III Based on Artificial Intelligence**
   Ana Savic, Nenad Kojic, Nikola Slavkovic

6. **Assistive system for Blind People on Shopping**
   Karen Duarte, Jose Cecilio, Jorge Sa Silva, and Pedro Furtado

7. **Using nonlinear signal processing in detecting reflections in room impulse response**
   Milan Pavlović, Dragan Ristić, Irini Reljin, Miomir Mijić

8. **Online algebra generator and web generated presentation of technical, especially mathematical expressions which contain variables**
   Angel Janev and Momčilo Ranđelović

9. **Online generator of dynamic generated geometrical forms, Web generated representation of geometrical shapes**
   Angel Janev and Momčilo Ranđelović

10. **Vehicle sensor node for smart parking's of the future**
    Roberto Pasic, Ilija Jolevski, Aleksandar Markoski

11. **Control and Monitoring Winemaking Process Online**
    Dimitrija Angelkov and Cveta Martinovska

12. **Current Mode Ionizing Radiation Dosimetry: An Overview of the State of the Art**
    Marko S. Andjelkovic, Goran S. Ristic

OHRID
LAKE

Old Town
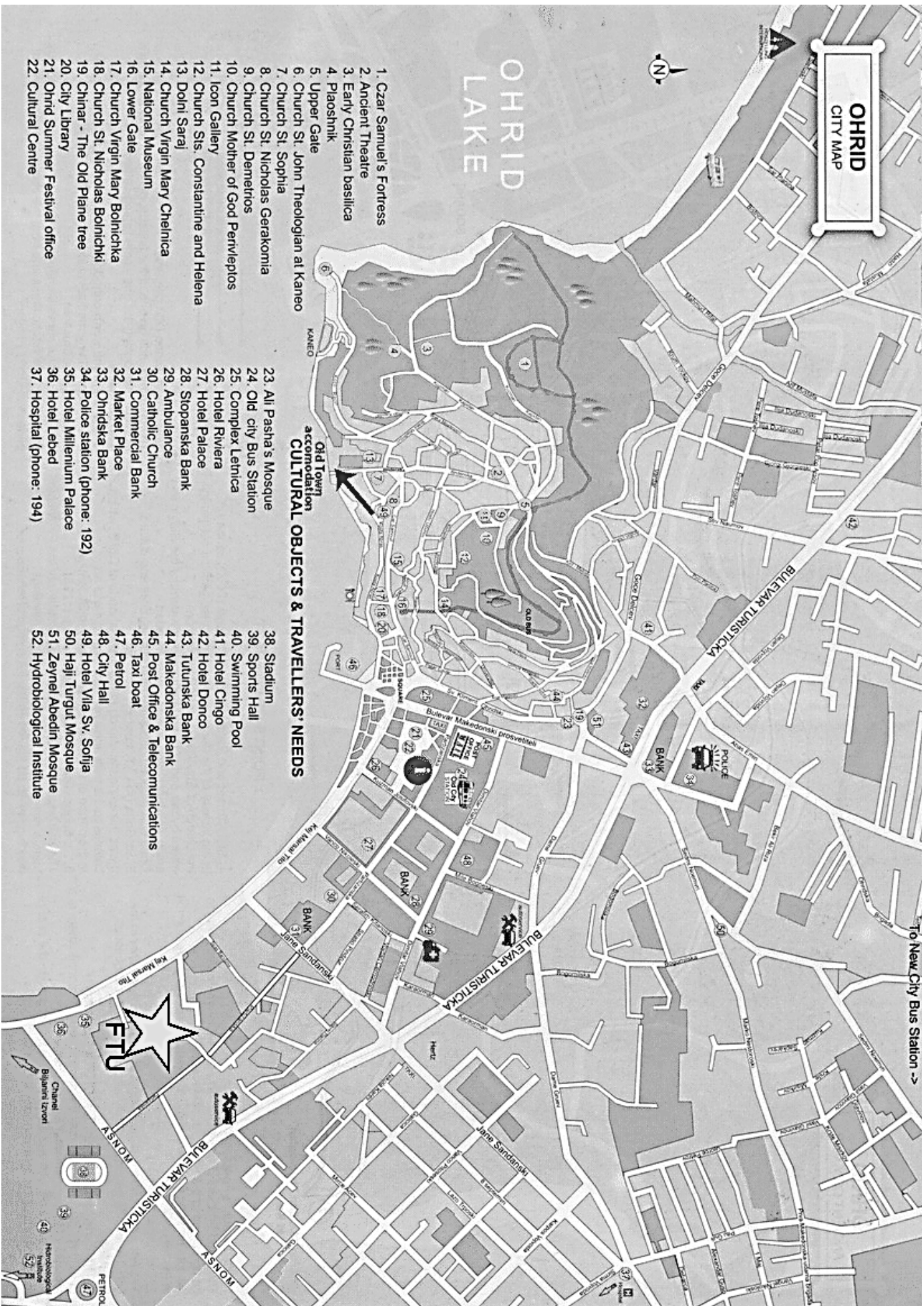accomodation
CULTURAL OBJECTS & TRAVELLERS' NEEDS

1. Czar Samuel's Fortress
2. Ancient Theatre
3. Early Christian basilica
4. Plaoshnik
5. Upper Gate
6. Church St. John Theologian at Kaneo
7. Church St. Sophia
8. Church St. Nicholas Gerakomia
9. Church St. Demetrios
10. Church Mother of God Perivleptos
11. Icon Gallery
12. Church Sts. Constantine and Helena
13. Dolni Saraj
14. Church Virgin Mary Chelnica
15. National Museum
16. Lower Gate
17. Church Virgin Mary Bolnichka
18. Church St. Nicholas Bolnichki
19. Chinar - The Old Plane tree
20. City Library
21. Ohrid Summer Festival office
22. Cultural Centre

23. Ali Pasha's Mosque
24. Old city Bus Station
25. Complex Letnica
26. Hotel Riviera
27. Hotel Palace
28. Stopanska Bank
29. Ambulance
30. Catholic Church
31. Commercial Bank
32. Market Place
33. Ohridska Bank
34. Police station (phone: 192)
35. Hotel Millenium Palace
36. Hotel Lebed
37. Hospital (phone: 194)

38. Stadium
39. Sports Hall
40. Swimming Pool
41. Hotel Cingo
42. Hotel Donco
43. Tutunska Bank
44. Makedonska Bank
45. Post Office & Telecomunications
46. Taxi boat
47. Petrol
48. City Hall
49. Hotel Vila Sv. Sofija
50. Haji Turgut Mosque
51. Zeynel Abedin Mosque
52. Hydrobiological Institute

To New City Bus Station ->