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„Rozvoj spolupráce formou stáží a odborných praxí v oblasti řízení letového provozu, VŠB – TU Ostrava"

ITI 2012

20.6 -28.6.2012

Studijní a informační brožura

Ing. František Martinec, CSc.

Ostrava, červen 2012

[Zadejte text.]

OBSAH

1 ITI 2012 - základní informace

Cíl: Po prostudování této části budete obeznámeny

- O jakou konferenci se jedná,
- S její historii, organizátorem, místem konání,
- S možnostmi spolupráce

Výklad

Organizátor - University Computing Centrum - SRCE zorganizoval konferenci o informačních technologiích v pořadí 34. ITI se tak řadí při uspořádávaní konferencí ICT s nejdelší tradicí v Chorvatsku. V roce 2012 ITI byl zamřen na akademickou a obchodní spolupráci. Efektivní využití obou části má přinést výhody pro obě skupiny.

Letošní témata a hlavních přednášejících byli následující - tradičně na konferenci je interdisciplinární:

Topics of interest:

- Networking, Grids, Middleware and Distributed Platforms
- Business Intelligence, Information Systems and Databases
- Knowledge Management and Collaboration Systems
- Human Computer Interaction
- Technology Enhanced Education
- Information Technology in Business and Government
- Data Mining, Statistics and Biometrics
- Language Technologies
- Modeling, Simulation and Optimization
- Theory of Computing, Computing Methodologies and Software Engineering

Keynote lecture

Joseph S. Valacich, The University of Arizona, USA
Title: *Designing Effective Web Sites: How Academic Research Influences Practice*
Gezinus J. Hidding, Loyola University Chicago Illinois, USA
Title: *I.S. Research of Business Practices: Many, One or Zero Academic Disciplines?*
Andrew Rindos, University Relations for IBM North Carolina, USA
Title: *Innovation within IBM (and WebSphere) Development through University Collaborations*
Clyde W. Holsapple, University of Kentucky, USA
Title: *The Knowledge of Business Intelligence*
Johann Sölkner, University of Natural Resources and Life Sciences Vienna, Austria
Title: *Very Many Variables and Limited Numbers of Observations;*
The p>>n Problem in Current Statistical Applications

Special lecture

Ray J. Paul, Brunel University, UK
Title: *Healthcare Information Systems from a User Perspective*

Z pohledu statistiky je možné konstatovat - v letošním roce bylo přijato 113 článků a posterů, které napsalo 186 autorů. Z těchto 186 autorů, 169 pochází z 27 zemí: Alžírsko, Argentína, Austrálie, Rakousko, Bosna a Hercegovina, Bulgarie, Chorvatsko, Česká republika, Estonsko, Finsko, Francie, Německo, Irsko, Itálie, Japonsko, Litva, Polsko, Portugalsko, Makedonie R., Rumunsko, Rusko, Srbsko, Slovinsko, Švýcarsko, Turecko, Velká Británie, USA, a 62 z nich je z Chorvatska. Kromě pořadatele - SRCE, devět mezinárodních chorvatských institucí a šest asociací na podporu konference.

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    University of Zagreb
John von Neumann Computer Society, Budapest
Jozef Stefan Institute, Ljubljana

☕ ITI 2012 – místo konání

Konference se konala v luxusním hotelu Croatia v městě Cavtat (http://www.hotelcroatia.hr/), pouze 10 minut (6 km) od mezinárodního letiště v Dubrovníku. Hotel se nachází na poloostrově obklopeném křišťálově čistím Jaderským mořem a nabízí malebný pohled na město Cavtat.

Obr. 1.1. Pohled od moře na hotel Croatia.

Cavtat

Cavtat, starověké řecké Epidaurum, je malé město v blízkosti Dubrovníku v jižní části Jaderského moře. Podle legend a kronik, uprchlíci z Epidaurum, unikli před invazí Slovanů a Avarů, založili Dubrovnik. V průběhu 15. století Cavtat se stal součástí Dubrovnické republiky. Město se pyšní pozůstatky různých kultur. Dnes je Cavtat velmi atraktivní směs staré a nové architektury a bujné středomořské vegetace.

Obr.1.2. Pohled na město Cavcat.

Dubrovník

Dubrovník, je město vytesáno do kamene pod vrchem Srdj, a je obklopen barevnou středomořskou zahradou a bylo vždy symbolem čisté krásy přírody v kombinaci s lidskou tvořivostí, láskou ke svobodě a smyslem pro skromnost. Malý stát, krása, která byla vždy výzvou a inspirací umělců, stejně jako cíl četných domácích i zahraničních návštěvníků. Goticko - renesančno - barokní město Dubrovník je dnes jedním z nejvýznamnějších chorvatských i evropských kulturních dědictví.

Obr.1.3. Pohled na město Dubrovník vstupní brány od moře .

University of Zagreb - University Computing Centre

University Computing Center (SRCE) byla založena v roce 1971. I když je nejstarší infrastrukturní instituce akademické a výzkumné komunity v oblasti aplikace informačních a komunikačních technologií (ICT). SRCE je stále jedním z hlavních nositelů témat při plánování, projektování, výstavbě a údržbě z oblasti nejnovějších výpočetních, komunikačních a informačních technologii pro rozvoj infrastruktury (e-infrastruktury). SRCE neustále udržuje stabilní, spolehlivý a kvalitní provoz této e-infrastruktury a centrální systémy, které podporují a zajišťují spojení mezi chorvatskými akademickými e-infrastrukturami, které navazují na související evropské a světové e-infrastruktury a poskytuje praktické, poradenské a vzdělávací služby pro členy akademické a výzkumné obce při používání informačních a komunikačních technologií.

Poslání SRCE:

- implementace nejnovějších informačních a komunikačních technologií,
- systém jakosti pro podporu studentů, akademických pracovníků při používání těchto technologií,
- shromažďování a sdílení odborných znalostí se zaměřením na vedoucí úlohu v akademické obci na vytvoření informační společnosti v Republice Chorvatsko.

Konference a výběr článků ITI 2011

ZAMĚŘENÍ JEDNOTLIVÝCH ČLÁNKU BYLO ROZDĚLENO DO 11 SKUPÍN:

1. KEYNOTE LECTURES
2. Special Topic/Session:
   "ACADEMIC AND BUSINESS COLLABORATION: INNOVATIVE BI"
   and BUSINESS INTELLIGENCE, INFORMATION SYSTEMS AND DATABASES
3. NETWORKING, GRIDS, MIDDLEWARE AND DISTRIBUTED PLATFORMS
4. KNOWLEDGE MANAGEMENT AND COLLABORATION SYSTEMS
5. HUMAN COMPUTER INTERACTION
6. TECHNOLOGY ENHANCED EDUCATION
7. INFORMATION TECHNOLOGY IN BUSINESS AND GOVERNMENT
8. DATA MINING, STATISTICS AND BIOMETRICS
9. LANGUAGE TECHNOLOGIES
10. MODELING, SIMULATION AND OPTIMIZATION
11. THEORY OF COMPUTING, COMPUTING METHODOLOGIES AND SOFTWARE
    ENGINEERING

Ke skupinám byli v rámci samostatné skupiny i 8 posteru.

Výběr článku bude realizován v některých případech pouze jejich abstraktem. Celý článek je možné najít ve sborníku, nebo na CD.

Obr. 1.4 Konference ITI 2012 - Vstup na konferenci

Obr. 1.5 Konference ITI 2012 – přednáška.

1. APPLICATION OF UASs TO SEARCH PEOPLE IN THE TERRAIN

František Martinec[1], Rudolf Volner [2]
VŠB – Technical University of Ostrava,
Abstract

The article is focused on the application of UASs for searching people in the terrain with new possibilities of the other UASs, methods and use of bio-information of the lost or wanted person.

Keywords -component; unmanned aerial vehicle, search and rescue, biosignals, sampling, UAS.

1 INTRODUCTION

In everyday life are constant demands for searching people (lost children, sick or wanted people, etc.) mainly in the rugged terrain. Currently used for these purposes, mainly video and infracamera. The article is focused on the application of UASs for searching people in the terrain with new possibilities of the other UASs, methods and use of bio-information of the lost or wanted person.

2   BIOMETRICS

As biometric technologies become more entrenched in the wide variety of applications that can benefit from positive human identity authentication, there is a growing interest in resolving some of the inherent difficulties with biometric systems. The techniques surrounding the use of multiple biometric concept combinations have often been cited as the solution, and significant research has been conducted to develop the concepts and to quantify the benefits. Experts in this field communicate these ideas and results, sometimes developing new expressions and terms needed to convey the findings.

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[2]Prof. Ing., Ph.D., Institute of Transport, Department of Air transport, Faculty of Engineering, VŠB – Technical University of Ostrava, Dr. Malého 15, 701 00 Ostrava (+420) 59 699 1765, e-mail rudolf.volner@vsb.cz

Biometric technology - the automated recognition of individuals using biological and behavioral traits - has been presented as a natural identity management tool that offers "greater security and convenience than traditional methods of personal recognition." Indeed, many existing government identity management systems employ biometrics to assure that each person has only one identity in the system and that only one person can access each identity. Historically, however, biometric technology has also been controversial, with many writers suggesting that biometrics invade privacy, that specific technologies have error rates unsuitable for large - scale applications, or that the techniques "are useful to organizations that regulate the individual, but of little use where the individual controls identification and authorization."

5 REQUIREMENTS FOR UAV TO SEARCH PEOPLE IN THE TERRAIN

Flying vehicle for searching people in the terrain should be dimensionally (range up to 2m), the smallest weight (up to 10kg total weight), user-friendly control, endurance flight approx 1 hour and hovering around 30 seconds duration. On the other hand we need sufficient number of sensors, which ensures fast retrieval searched persons.

6 SUITABLE SIGNAL SELECTION TO SEARCH PEOPLE

In our case, we will focus on the use of UASs to search people for general use. Specifically, we will look into the possibility of detection and scanning the manifestations of the human body.

From the large number of biological signals that the body produces, we must select those which are possible to scan with the the current (or near future) techniques. Due to the requirement for remote (contactless) scan is necessary to exclude a large number of biological signals, biochemical signals and for the other signals will try to choose specific options for their capture. We will build on the manifestations of the human body.

1. Electric biosignals

Signal	Characteristic	Amplitude level (mV)	Frequency range (Hz)	Measurability	Usable
EKG	Electrocardiography – heart's electrical activity	0,5 -5	0,5	Surface	No
EMG	Electromyography - electrical activity of skeletal muscles	0,5 – 10/0,05 - 5	0,01 – 10 000/0,01 – 10 000	Surface/ injection	No
EEG	Electroencephalography – activity of brain's neurons	0,005 – 0,3	0,1 - 100	Surface	No
ECoG	Electrocorticography – activity from the cerebral cortex	0,005 – 10	0,1 - 100	Surface	No
EP	Evoked potential – electrical potential recorded from the nervous system	0,0001 – 0,02	Jednotky Hz	Surface	No
ENG	Electroneurography	0,005 - 10	0,01 - 1000	Injection	Yes
EOG	Electrooculography – measuring the resting potential of the retina	0,01 - 5	0,05 - 100	Surface	No
EGG	Electrogastrograph - electrical signals of stomach muscles	0,1 – 10/0,01 – 0,5	0,01 – 5/ 0,01 – 5	surface/ nitro gastric	No
ERG	Electroretinography –	0,005 - 1	0,2 - 50	Surface	No

	activity of the retina				
fEKG	Fetal electrocardiography – heart's electrical activity	0,01 – 0,02	0,01 - 250	surface	No

2. Magnetic biosignals

Signal	Characteristic	Amplitude level (mV)	Frequency range (Hz)	Measurability	Usable
MOG	Magnetooculography – activity of the retina	10	0,1 - 100	magnetic	No
MKG	Magnetocardiography - potential of cardiac muscle cells	50 - 70	0,05 - 100	magnetic	No
MMG	Magnetomyograpgy– electrical activity of skeletal muscles	10 - 90	0 - 20000	magnetic	Yes
MEG	Magnetoencephalography – activity of brain's neurons	1 -2	0,5 - 1	magnetic	No

3. Acoustic biosignals

Signal	Characteristic	Dynamic range(dB)	Frequency range (Hz)	Measurability	Usable
Fonocardiography	Heart sounds	to 80	5 - 2000	magnetic	Yes
Foniatric signal	Information about the heart, blood circulation and respiration	to 80	440 – 10 000	magnetic	Yes

7 SAMPLING, ANALYSIS AND SYNTHESIS SAMPLING SIGNALS

Sampling, analysis and synthesis sampling signals have by used for scan missing peoples rangy land. There we want used some sampling methods (passiv and active with used appropriate frequency spectrum and analysis sampling data, synthesis and comparison with basic informations from relatives (fotodocumentation, verbal description) sought person. Information for analysis will be achieved from more special sensors on the UASs and relatives sought person.

7.1. Methods sampling, analysis and synthesis human body

Methods sampling, analysis and synthesis human body the are be repose on the used some passive and active sensors:

Sn 1 sampling visual spectrum – image with frequency spectrum $f_1 – f_2$

Sn 2 sampling infra picture with frequency spectrum $f_2 – f_3$

Sn 3 sampling data with frequency spectrum $f_3 – f_4$

Sn 4 sampling data with frequency spectrum $f_4 – f_5$

.

.

Sn n sampling data with frequency spectrum $f_5 - f_n$

Informations form sensors we give for analysis.

Analysis data princip:

Analysis data from each sensors wil be realised accord type sensors:

1. Image signal by sensor Sn 1 – analysis video image

2. Infra signál dy sensor Sn 2 analysis infra signal

3. Electrical signal from other sensors Sn 3 – Sn n – we made analysis by the princip sampling parameter and used method sampling. Block analysis is computer calculated data by special algoritm.

All parameters will be calibrated for synthesis.

Synthesis:

Synthesis owershoot electronical in block analysis and a synthesis compare select calibrated data from block reference data and calibrated data from sensors after analyis and calibrate. Number of compatated data wil be given by the number of used sensors – used frequency spectrum and ability block analysis and synthesis.

Processind reference data:

Reference data sought person we will take from relatives aimed at:

- visual visage
- proportions
- weight
- colour of hair
- possible dress
- special data

Other data we will fine by the number of sensors and scale sampling spectrum.

Methods sampling analysis and synthesis human body.
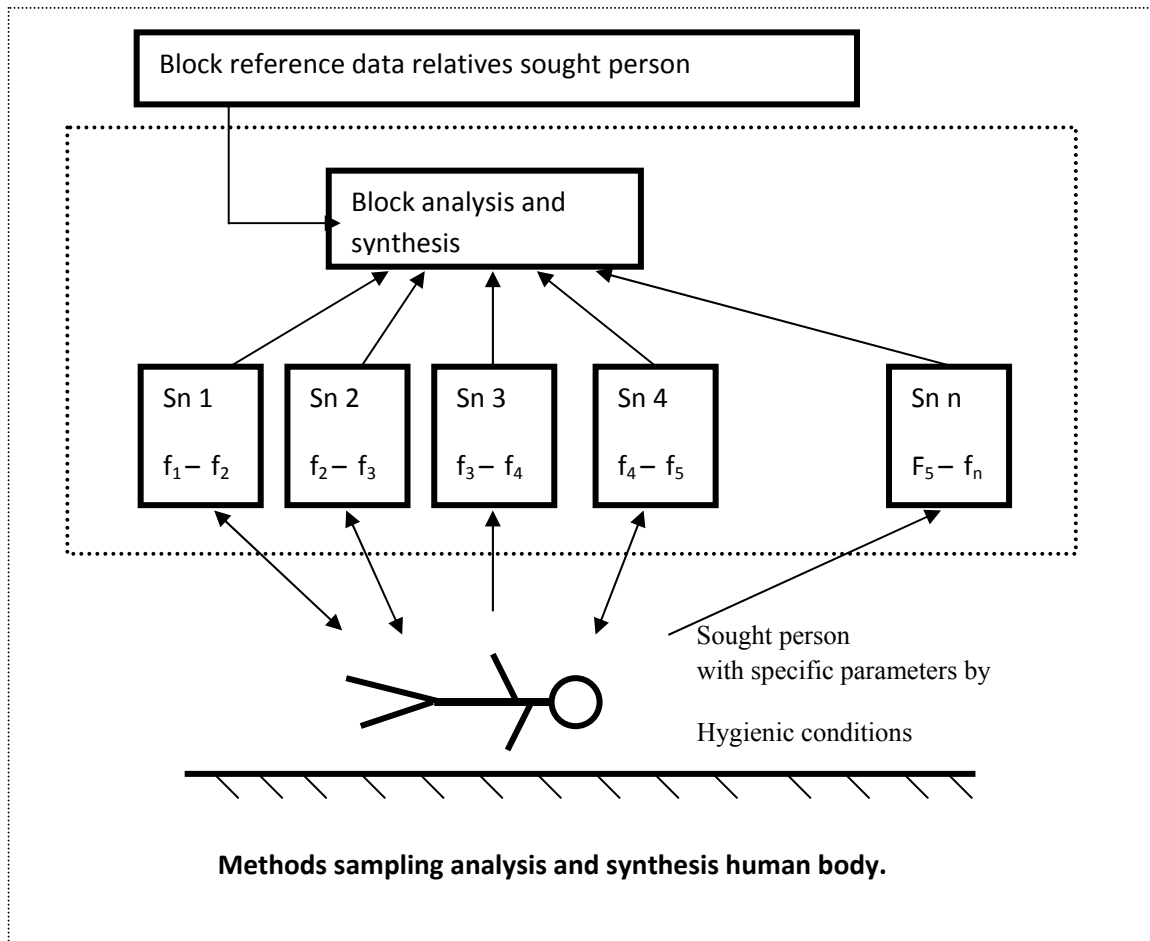
8. CONCLUSION

The basic condition for the use of UASs to search people in the terrain is suitable carrier and suitable sensors. The way of the development of media, computing, sensors and navigation enable to

successfully deploy UASs to search for people in the terrain in the near term.

2. HCI in Personal Health Information Management

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Abstract. *In creating of adaptive user-friendly e-health care service for people with movement disabilities, human's affect sensing is included in Human Computer Interaction (HCI), Human-Robot Interaction (HRI), Computer Mediated Communication (CMC). To further development of this model, research results present the development of multi-agent-based human computer interaction model and its integration into the system of fuzzy neural control of speed of N wheelchair type robots to providing movement support for disabled*

individuals. Personal information management (PIM) pervades every aspect of our lives, including health care. As users of the health care system, we rely on our ability to manage information to combat illness and stay healthy. When seeking help for a health-related problem or question, we navigate a complex system where health services are distributed across multiple clinicians in a variety of specializations and institutions. Within the system, efforts to reduce costs have limited the time clinicians are able to spend with patients.

Keywords. Personal information management, HCI, health**,**

1. Introduction

Personal information management (PIM) pervades every aspect of our lives, including health care. As users of the health care system, we rely on our ability to manage information to combat illness and stay healthy. When seeking help for a health-related problem or question, we navigate a complex system where health services are distributed across multiple clinicians in a variety of specializations and institutions. Within the system, efforts to reduce costs have limited the time clinicians are able to spend with patients.

Recent years have witnessed a growing interest of psychopathology for therapeutic uses of Information and Communication Technologies (ICT). Researchers and clinicians are carrying out interdisciplinary projects and empirical investigations of computer-based treatments dedicated to the rehabilitation of psychiatric patients. Some projects gave rise to practical implementations in clinical settings, a quite publicized example being the use of virtual reality for treating various forms of phobias and anxiety disorders. Companies specialized in developing software intended for psychotherapy are starting to emerge.

Academic networks are being formed to exchange ideas and results, with international conferences organized regularly for the purpose of bringing together researchers from various disciplines including computer sciences, psychology and psychiatry. Examples of the multiple aspects of this new and dynamic field of research will be provided throughout the present chapter.

Network intelligence will evolve through growth in computational power and through the accumulation of knowledge about the types of input data needed for making decisions concerning expected response, and about the algorithmic processing required in a complex and changing communications environment. Increasingly sophisticated network intelligence makes possible look-ahead planning, management before responding and reasoning about the probable results of alternative actions. These intelligent network capabilities can provide service providers with competitive and operational advantages over traditional networks.

Effective management of information is particularly challenging for patients facing conditions (such as cancer) requiring extended outpatient care. For cancer patients, a primary intervention (such as surgery) is generally followed by therapy (such as radiation, chemotherapy, or hormone therapy) that can last additional weeks, months, or years. As a result, they must stay on top of changing treatment regimens while trying to maintain their routine at work and at home.

2. Public Health Information Network

Public Health Information Network prioritizes public health information systems' functional requirements, capabilities, performance measures, and operational characteristics while letting the architects of those systems choose enabling approaches, methods, and concepts to meet the requirements.

Many factors support reorganization, but two are particularly important. First, the healthcare domain is rapidly evolving and will continue to do so. Accordingly, PHIN will always be in a state of flux, requiring a correspondingly flexible organization. Second, public health departments found PHIN difficult to use,

suggesting that the CDC improve PHIN by "reorganizing the requirements; consolidating, simplifying, and rewording specific requirements; and modifying the format for presenting the requirements."

Because many agencies are involved in certification activities, any changes to PHIN must also cross-reference the previous version. In short, the CDC must redress a deficient, overly complex, and static representation of PHIN and find an adaptable, understandable way to model reference specifications and requirements in a rapidly evolving domain comprised of diverse, distributed organizations and providers.

- Integrating personal, professional, and health-related information,

- Using integrated information to make health-related decisions,

- Sharing information with individuals from social, professional, and health-care networks while maintaining personal privacy.

Our findings are consistent with the results from general studies of people's personal information management needs:

- Information is fragmented by location, device, form (such as paper, email, e-documents, Web references, and notes), and associated organizations. People complain and experience problems with the many different information organizations they must maintain in parallel,

- Encountering useful information, people may not know how and where to keep it or even whether it is necessary to do so,

- People often forget to use or cannot find information, even when they have stored it for later use,

- People can become overwhelmed by available information, possibly because of its jargon, organization, or overall volume, and experience degradation in the quality of their personal decision making,

- People's approaches to PIM, which vary greatly across a variety of information forms, need the kind of support that accommodates this variation.

These patients dedicated valuable time and energy, sometimes to the point of exhaustion, to sharing information with family, friends, and colleagues. Some employed a broadcast strategy (such as email lists) to minimize the effort of distributing information broadly to their social networks. Unfortunately, those using this strategy could not moderate the information exchange for different

relationships within their social networks. Others adopted more personalized communication strategies (such as phone calls and individual email) to customize and filter information exchange with different people.

3. Emotional State Recognition

From stimulus point (when emotional change occurs), four characteristics can be extracted from SC (skin conductance) data: latency, rise time, amplitude, half recovery time, and one parameter from ECG (electrocardiogram) – heart rate variability. The purpose is to transform these five parameters into particular emotional state. In this case, the eight discrete emotional states are used: *Fear, Surprise, Anger, Happy, Disgust, Calmness, Sad, and Sleepiness – fig. 3*. The clustering was done in order to make sure that the parameters classes of different states differs enough that could be used in prediction and, as the errors could come from labeling the data points (teacher noise), classifying data into somewhat similar clusters can lead to noise reduction, and therefore, higher accuracy. For clustering, *SOM (*self organizing maps), unsupervised self-

learning algorithm, was used, that discovers the natural association found in the data. *SOM* combines an input layer with a competitive layer where the units compete with one another for the opportunity to respond to the input data. The winner unit represents the category for the input pattern. Similarities among the data are mapped into closeness of relationship on the competitive layer.

4. Paradigms of Computer Uses

Current computer-based treatments in psychopathology seem to follow mainly three paradigms:

- compensation of disabilities,

- desensitization to anxiety or addictive craving and training of cognitive,

- social and emotional functioning.

The compensation approach seeks to alleviate the disabilities provoked by the symptoms and cognitive deficiencies through the use of assistive technological devices.

Human Computer Interaction (HCI) in the system is realized in providing of necessary e-health care support actions for *user1* to *userN* discovered in the *Personal Information Databases* - Fig. 2. To proposing of precisely controllable social care aware movement actions by robot *1, 2, ..,* and *N* for given user with movement disabilities, a real-time Off-Policy Agent Q-learning algorithm was used

$$Q(s,a) \leftarrow Q(s,a) + \alpha[r + \gamma max a'Q(s',a') - Q(s,a)]$$

Unlike the classical classifications that have a well established aim and clear grouping criteria, the automatic classifications have as a unique criterion the similarity [2] between the patients that are to be grouped. There is a variety of methods that may be used to measure the similitude.
In data clustering the mostly used similarity is represented by the Euclidean distance given by the following formula

$$d(x,y) = \|x - y\| = \sqrt{\sum_{i=1}^{n} (x_i - y_i)^2}$$

where $x = (x_1, ..., x_n)$,
$y = (y_1, ..., y_n)$ - are two points given in the cartesian coordinates.
Another method to measure a similarity is represented by the cosine of the direction of two vectors $x = (x_1, ..., x_n)$, $y = (y_1, ..., y_n)$ and is given by the following formula

$$\cos\theta = \frac{(x,y)}{\|x\|\|y\|}$$

where (x,y) - the scalar product

$\|\cdot\|$ - the Euclidian norm

$$x, y \in R^n.$$

Practically, an automatic classification achieves an optimum patient clustering from the point of view of the similarity ratio between them.

Healthcare-specific regulatory and technological requirements further influence the choice of countermeasures used in PHIM as compared to those that might be used with standard office IT:

- PHIM must operate safely and effectively. Protection mechanisms must not interfere with the intended medical use of the equipment,
- When there is a failure, PHIM usually „fails open", leaving the system usable. Non-medical IT equipment usually shuts down upon failure, e.g., Automatic Teller Machines go out-of-service in the event of a problem.

Behavioral/Administrative Defenses - In addition to the protective measures described above, organizations should consider the following additional processes and technologies:

- Risk analysis and mitigation planning,
- Restrict physical access to PHIM whenever possible by physically hiding PHIM, closing doors, locking keyboards etc.,
- Review all connections of PHIM to other equipment and networks for necessity and reduce,
- such connections to the absolute minimum. Properly configured routers by trained IT staff can deliver a high level of security,
- Wireless communications must receive special attention. For example improperly con-figured devices could inadvertently connect to an adjacent but unknown network.

The Defense In Depth concept realizes that protecting the security of an enterprise is best achieved by duplicating controls at multiple locations. A healthcare facility should establish a multi-layered defense against the risks and consequences of malware and other PHIM threats. It is helpful to provide defenses at different layers. In this way, if an attacker gets through one network security measure, there are additional security measures to help thwart the attack.

5. Conclusion

This paper presents further development of recently proposed by author's model of intelligent e-health care system for people with movement disabilities. The research results present the development of multi-agent-based human computer interaction model and its integration into the system of fuzzy neural control of speed of two wheelchair type robots to providing movement support for disabled individuals.

6. References

[1] Volner, R.: "CATV – Interactive Security and Communication System", *34th Annual 2000 International Carnahan Conference on Security Technology,* October 2000 Ottawa, Canada, pp. 124-136, IEEE Catalog Number 00CH37083, ISBN 0-7803-5965-8,

[2] Volner, R.: "Home security system and CATV", *35th Annual 2001 International Carnahan Conference on Security Technology*, October 2001 London, England, pp. 293 – 306 IEEE Catalog Number 01CH37186, ISBN 0-7803-6636-0,
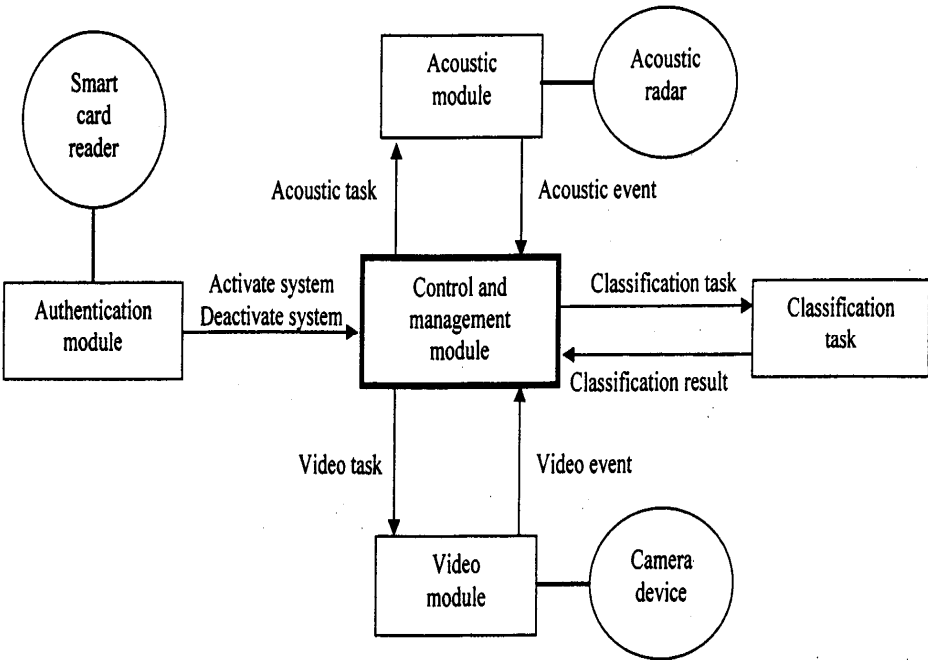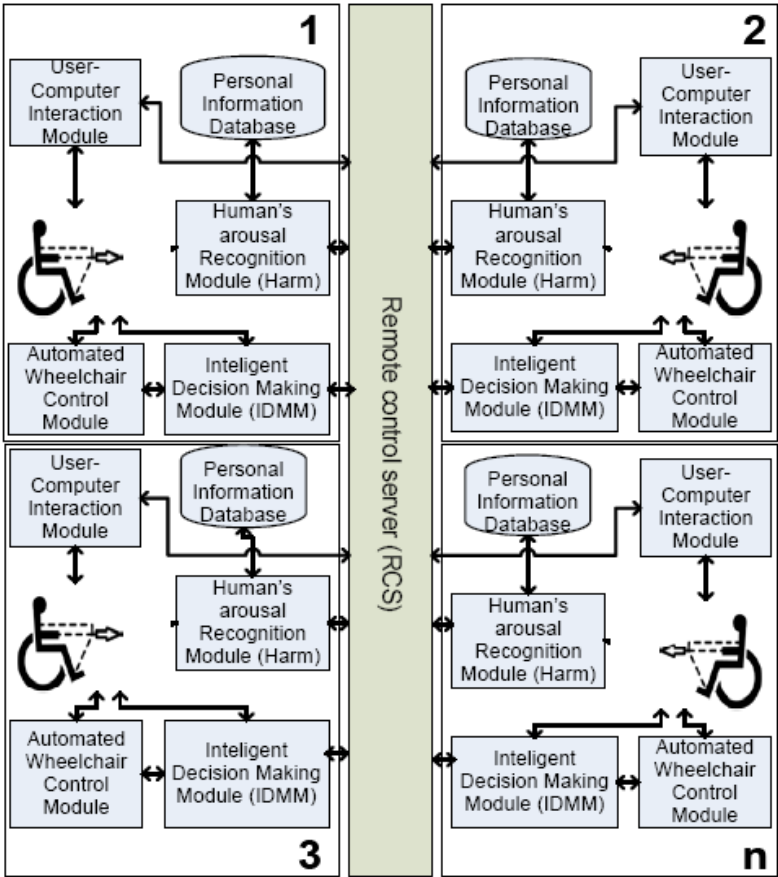
Figure 1: System architecture

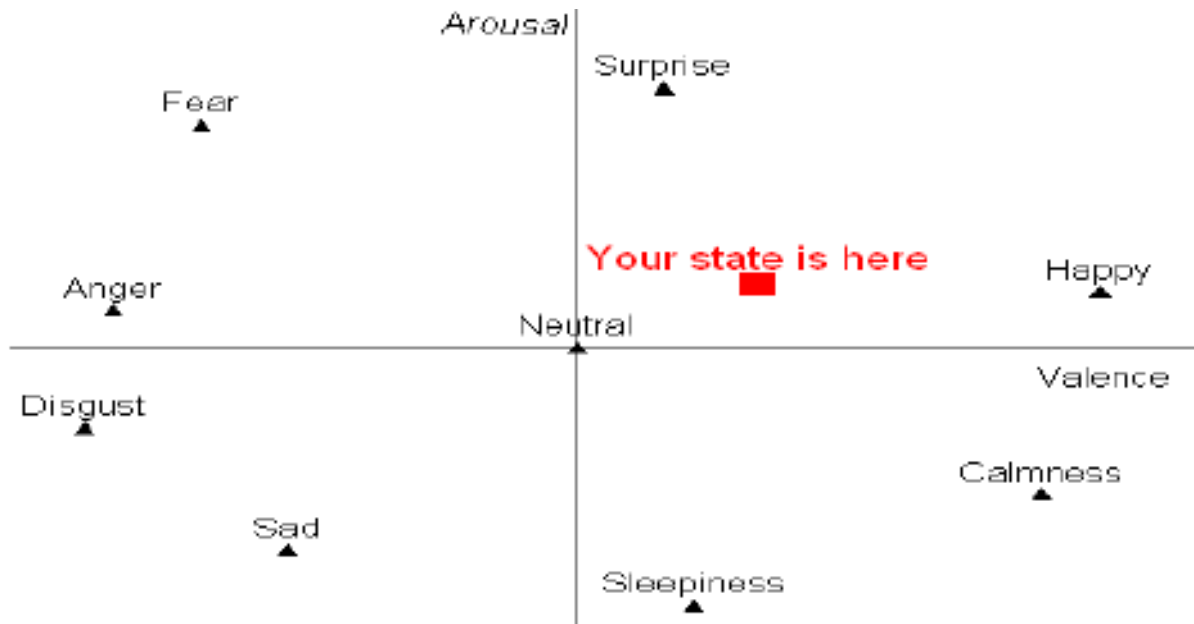Figure 2: The modified computer mediated communication model of the system

Figure 3: Elements of physiological parameters recognition subsystem – emotional state allocation on continuous arousal-valence space

3. The Method of Aircraft Control System Evaluation

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Abstract. The dynamical development of general aviation brings necessity of creation an aircraft control system enabling safely fly the plane to people having no extraordinary qualifications. Main goals of such control systém are to reduce pilot's load, to improve the control precision, to prevent an aircraft against dangerous situations. There are lots of criterions applied to grade and to describe both aircraft's flying characteristics and handling qualities of general aviation airplanes equipped with a classical mechanical control systems. But modern small transportation aircraft are going to be equipped with fly-by-wire control systems and there are no clear, straight, rules defining the process of rating and describe handling qualities of small airplanes with fly-by-wire control system. The paper presents the methodology created by authors allowing classifying and comparing handling qualities of general aviation aircraft equipped with fly-by-wire control systems. It takes into consideration two parameters: pilot's effort during realization of ordered tasks and precision of his control. The presented methodology was tested during real operational conditions on a small four-sited airplane PZL- 110. Sample results reached during flight tests are included.

Keywords aircraft control system, handling qualities, flight tests

4. Integrated Framework for Virtual Team Management

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Abstract. Virtual teams are increasingly engaged in globalized business environments. Virtual teams work across space, time and organizational boundaries with links ensured by information and communication technologies.Communication, collaboration, and knowledge exchange are the most important in virtual teams' operations and their efficiency directly influences teams' performance. In this paper benefits and challenges of virtual teams are described, and description of software tools used by virtual teams is given. Previous efforts to provide efficient communication, collaboration, and management tools and frameworks for virtual teams are summarized. Some promising research directions are indicated. Finally, integrated framework for virtual team management is proposed.

Keywords. virtual teams, project management, collaboration, software tools, groupware

5. E-learning: a New Way of Living Learning and Educational Experiences

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Abstract. In the information era, the role carried out by new technologies has become crucial to satisfy the continuous educational needs: education acquired strategic importance for companies which have to give value to human capital and have to increase the knowledge heritage, to become learning organisations. Theturning point between e-learning C.B.T.instruments and e-learning consists in thepossibility of transforming the role of learners from passive into active: given that they are members of a formative process, they can model the path itself according to their own requisites and capability of learning. The development of new tools and supports has favoured the diffusion of new e-learning models, but the main push comes mainly from cultural, historical and economical needs of our modern society. The principle outlining an e-learning system is the possibility of sharing information through a synchronic/or not synchronic continuous education of the users: in this way users can have access to contents anytime and anywhere, provided that there is a web connection. Through an exploitation of multimedia and interactivity, personalised learning paths are encouraged, as well as better comprehension of processed contents. For sure there are two applicative fields: on one side the educational institutions such as schools and universities which need such instruments to face the difficulties of students not living in their hometown, in case of difficult environmental situations, for long absence periods or simply for convenience or better adaptation to the needs of working students; on the other side companies which, for a strategic need, have to keep and distribute their know-how in a simple and controlled way. Let's make three different examples to understand how relevant and modern the application of this instrument is: a bank present in a nation with 400 branch offices and bureaus needs to train all the employees in a way that they can show and administrate effectively a new series of services and financial products to offer to its customers; a government launches a school reform introducing new competences required for all the teachers, with the following need to train all the teachers at any level; a practitioner needs to be constantly updated and trained on the innovations introduced by the research and the experience in his profession, if possible he would like to meet his colleagues or expert specialists. The most important aspects such as costs, time and spaces are cancelled through elearning. In conclusion, let us define an elearning platform model for the university. From what has been stated up to now, to provide formation cannot be reduced to the transfer of contents, but it is about culture diffusion: the model observed cannot just take into account the specific teaching fields, but it will have tos imply a more general action to spread a ready and innovative cultural proposal of academic kind.

The model develops taking two goals into account:

1. the implementation of an e-learning portal addressed on one side to university students, to the world of companies and to professionals, to spread and to render the communication on the formative offer within the university uniform and quickly accessible; on the other side for teachers and technical and administrative personnel as a working instrument and as an instrument for exchanging information. In this way the portal becomes a mean for:
- receiving information on the formative offer of the university;

- receiving information on culture and on the methods of at-distance communication;
- participating to the national and international debate on university education and on the methods of e-learning;
- connecting with the university

2. Definition of methods for "mixed" Elearning in the view of an integrated teaching but also in the sense of a real third generation on-line e-learning. The aim is the definition of a flexible and complete "protocol" adaptable for the different requirements, resources and customers. The essential characteristics of such a model, such as scalability and adaptability will be the turning point for the interaction with the informative and teaching materials, with the teachers, among the students, with the different realities to the university world: through the figure of a tutor the access to formation will be constantly supported and mediated in the different contexts and in the different teaching moments.

For the implementation of such a model we have to consider the organisation of materials(which will have to be of modular type, as it is foreseen by the learning objects), the kind of support through which spread contents, and the modality of communications. In order to illustrate the project within the university, to spread a terminology and a culture related to e-learning ,and to open a dialogue with the teachers available to implement this model to be defined we could organise series of seminaries to which experts of the sector will be invited, also coming from other than the university environment: such seminaries should be made available online so that to create also a virtual discussion place to leave active for the whole project period.After having implemented the model described above one can imagine and wish,beyond the advantages that e-learning contains in its structure (about those we largely discussed above), positive specific feedbacks for the addressee of the project- the university- in terms of:

- Increasing the importance and the value of the university through the diffusion of university culture;
- Increasing the offer capability of the university, and widening the possible customers;
- Bettering the services offered(transparency, uniformity, quickness).

Obr. 1.6 Konference ITI 2012 – diskuse.

Obr. 1.7 Konference ITI 2012 – jeden ze tří jednacích sálů- americký zástupce prezentuje
příspěvek k správné prezentaci.

Obr. 1.8 Konference ITI 2012 – výhled z hotelu umožňoval pozorování vzlet a přistání na letiště

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🔍 Další zdroje

http://www.mapa-mapy.sk/mapa/letisko-vieden-schwechat-rakusko/

http://www.mapa-mapy.sk/mapa/dubrovnik-chorvatsko/

http://sk.wikipedia.org/wiki/Letisko_Viede%C5%88-Schwechat

http://en.wikipedia.org/wiki/Dubrovnik_Airport

http://www.crocontrol.hr/ATC01

2   Zvláštnosti letiště Dubrovník

Cíl: Po prostudování této části budete obeznámeny

- Se základnými parametry letiště
- Se zvláštnosti světelného vybavením letiště v oblasti ŘLP

Výklad

Dubrovník Airport (IATA: DBV, ICAO: LDDU), označovaný také jako Čilipi letiště, je mezinárodní letiště Dubrovnik, Chorvatsko. Letiště se nachází přibližně 15,5 km (9,5 míle) od centra města Dubrovníku, v blízkosti předměstí Čilipi. Letiště je druhé největší v Chorvatsku - jde o počty cestujících a nejdelší přistávací dráhu obr. 2.1. a 2.2..

Nový 36 500 m^2 (392.883 sq ft) terminál se čtyřmi proudovými mosty je před dokončením. Problém je dokončení přístupu k letadlum. Tyto přístupy nejsou ještě dokončeny.

Zvlaštností letiště v Duborvníku je jeho postavení – několik metru nad zemí, ale prudký svah ze severní strany letiště od města Dubrovník do výšky letiště obr. 2.5 vlevo. Sestupová osa je na městem Cavcat, kterého velká část je na malém poloostrově s nadmořskou výškou pár metru obr. 1.2 vlevo.. Tohle si vyžádalo zvláštní řešení světelně navigačního zařízení obr. 2.3. – 2.5.

Obr. 2.1 Letiště Dubrovnik – pravá část.

Obr. 2.2 Letiště Dubrovnik – levá část

Obr. 2.3 Letiště Dubrovnik – RWY – světelná řada

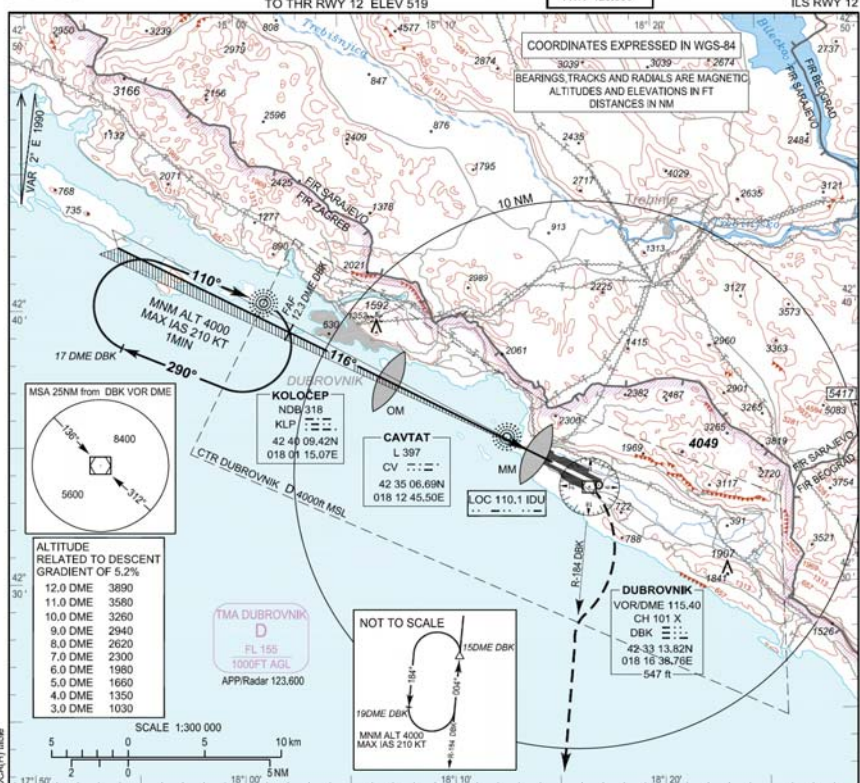*Obr. 2.4 Letiště Dubrovnik – reální provedení naváděcích svetel*
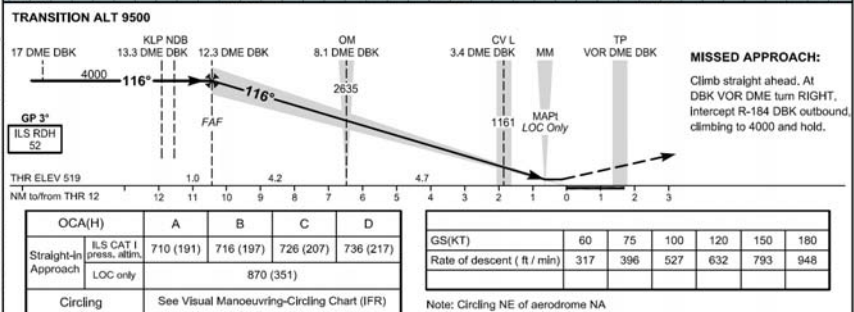
[Zadejte text.]

INSTRUMENT APPROACH
CHART-ICAO

AD ELEV 527
HEIGHTS RELATED
TO THR RWY 12 ELEV 519

APP 123.600
TWR 129.500

DUBROVNIK / Čilipi
CROATIA
ILS RWY 12

COORDINATES EXPRESSED IN WGS-84

BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
ALTITUDES AND ELEVATIONS IN FT
DISTANCES IN NM

10 NM

110°
MNM ALT 4000
MAX IAS 210 KT
1MIN
17 DME DBK
290°
116°

KOLOČEP
NDB 318
KLP
42 40 09.42N
018 01 15.07E

CAVTAT
L 397
CV
42 35 06.69N
018 12 45.50E

LOC 110.1 IDU

OM

MM

4049

R-184 DBK

DUBROVNIK
VOR/DME 115.40
CH 101 X
DBK
42 33 13.82N
018 16 38.76E
547 ft

MSA 25NM from DBK VOR DME

8400

5600

312°

136°

LCTR DUBROVNIK D 4000ft MSL

ALTITUDE
RELATED TO DESCENT
GRADIENT OF 5.2%

DME	ALT
12.0 DME	3890
11.0 DME	3580
10.0 DME	3260
9.0 DME	2940
8.0 DME	2620
7.0 DME	2300
6.0 DME	1980
5.0 DME	1660
4.0 DME	1350
3.0 DME	1030

TMA DUBROVNIK
D
FL 155
1000FT AGL
APP/Radar 123.600

NOT TO SCALE
15DME DBK
19DME DBK
MNM ALT 4000
MAX IAS 210 KT

SCALE 1:300 000

5   0   5   10 km
2   0   5 NM

TRANSITION ALT 9500

17 DME DBK	KLP NDB 13.3 DME DBK	12.3 DME DBK	OM 8.1 DME DBK	CV L 3.4 DME DBK	MM	TP VOR DME DBK

4000
116°
116°

2635

GP 3°
ILS RDH
52

FAF

1161
LOC Only

MAPt
LOC Only

THR ELEV 519

NM to/from THR 12

1.0   4.2   4.7

MISSED APPROACH:
Climb straight ahead. At
DBK VOR DME turn RIGHT,
Intercept R-184 DBK outbound,
climbing to 4000 and hold.

OCA(H)		A	B	C	D
Straight-in Approach	ILS CAT I press. altim.	710 (191)	716 (197)	726 (207)	736 (217)
	LOC only	870 (351)			
Circling		See Visual Manoeuvring-Circling Chart (IFR)			

GS(KT)	60	75	100	120	150	180
Rate of descent (ft / min)	317	396	527	632	793	948

Note: Circling NE of aerodrome NA

CHANGE: CTR Dubrovnik lateral limits; TWR frequency; circling note at OCA(H) table

AIRAC AMDT 2/10

3   Letadlo - Airbus A 321 221

Cíl: Po prostudování této části budete obeznámeny

- S letadlem provozovaným na trati Vídeň – Dubrovnik

Výklad

Na trase Wídeň – Dubrovník letá letoun Bombardier Q400 (Bombardier Dash 8 nebo Q Series), dříve známý jako de Havilland Canada Dash 8 a DHC-8, je série dvoumotorových, turbovrtulových letadel středního doletu. V době konání konference a blížícího se letního období nasadili nový letoun Airbus A 321 221.

Obr. Letoun Airbus A 321 221 po příletu do Dubrovníku.

Airbus A321 je prodloužená verze Airbusu A320, oproti původnímu modelu se tedy vyznačuje vyšší přepravní kapacitou. Dohromady spolu s A-318, A-319 a A-320 tvoří rodinu úspěšných úzkotrupých letadel pro krátké a střední tratě z dílen Airbus Industrie. Dvojici A321 provozují i České aerolinie.

Vznik, popis

Projekt Airbusu A321 byl veřejnosti představen v listopadu 1989 a první let se uskutečnil 11. března 1993 (F-WWIA, v.č. 364). Evropskou certifikaci typ získal v prosinci téhož roku. Dodávky prvnímu zákazníkovi, Lufthanse, byly zahájeny v lednu 1994.

Oproti A320 se liší zejména délkou trupu, zesíleným podvozkem a novými motory. Do trupu bylo přidáno 13 přepážek a jeho délka se prodloužila o 4,27 m před křídlem a 2,67 m za křídlem. Díky tomu může letoun vzít na palubu o 24 % cestujících více, nákladní prostor se zvětšil dokonce o 40 %. Paluba pro cestující je dlouhá 34,44 m s maximálním průměrem 3,7 m.

Existují tři základní uspořádání kabiny:

- Celoekonomické pro 200 cestujících, sedících po šesti v řadě s uličkou širokou 0,48 m, rozteč mezi sedadly je 0,81 m.
- Charterové provedení pro 220 cestujících, cestující sedí po šesti v řadě s uličkou 0,48 m, rozteč mezi sedadly je 0,73 m.
- Uspořádání do dvou tříd – obchodní (16 sedadel s roztečí 0,89 m, po čtyřech v řadě, ulička 0,69 m) a ekonomické (170 sedadel po šesti v řadě s roztečí 0,81 m, ulička 0,48 m)

Nákladní prostor v podpalubí je rozdělen na dvě části, přední umístěná před centroplánem je dlouhá 8,27 m a vysoká 1,24 m, využitelný objem je 23,22 m^3. Lze zde umístit pět kontejnerů LD-3-46W (3,68 m^3), LD-3-46 (3,11 m^3) nebo volně ložený náklad. Zadní nákladový prostor je dlouhý 11,39 m a 1,24 m vysoký, opět do něj lze naložit až pět kontejnerů nebo volný náklad o objemu až 28,94 m^3.

Pohonné jednotky jsou zavěšeny nad kompozitových pylonech pod křídlem. Nabízeny jsou dva typy dvouproudových motorů - CFM56-5 nebo IAE V2500.

Změny se týkají také křídla. Oproti křídlo u A320 je dimenzováno na vyšší plošné zatížení, a to zvětšením odtokové hrany s účinnějšími dvouštěrbinovými klapkami. Je také vybaveno dvojicí nových slotů. Ocasní plochy jsou vyrobeny z karbonových slitin a jsou o 800 kg lehčí než kovové, použité u A-320. Vzhledem k vyšší vzletové a přistávací hmotnosti byl zesílen podvozek, nyní opatřený širšími pneumatikami a účinnějšími brzdami. Rozchod je 7,59 m a rozvor 16,92 m.
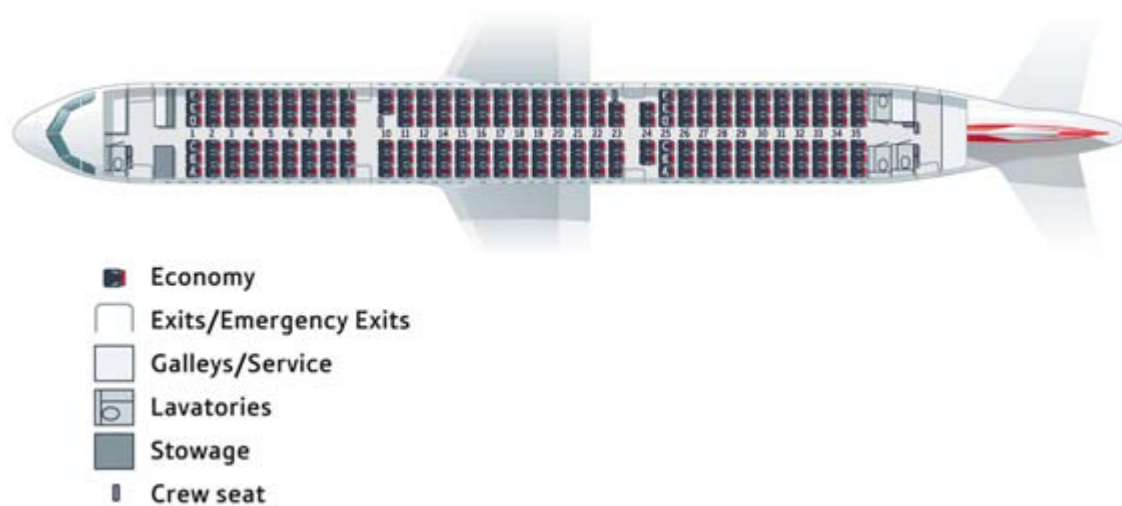
Přímým konkurentem Airbusu A321 byl dříve zejména Boeing 757-200, jehož výroba skončila v říjnu 2004. Srovnatelným letadlem ze současné produkce Boeingu je B737-900ER.

Details

Type of aircraft	Short- & medium-haul passenger aircraft
Manufacturer	Airbus Industrie, France
Names - Austrian Airlines painting	Steirisches Weinland, Wachau, Wien
Number of aircraft	3
Seating capacity	up to 193 C/Y
Min. legroom	Y/30"=76.2cm

Wing span	34.1 m
Length	44.5 m
Height	11.8 m
Max. cruising speed	980km/ h
Max. cruising altitude	11,900 m
Type of engine	CFM 56-5B1/2P
Max. thrust	2 x 32,000 lbs
Fuel capacity	19,000 kg
Max. range full payload	3,500 km
Max. payload	21,600 kg
Max. take-off weight	89,000 kg
Max. landing weight	75,500 kg

Economy
Exits/Emergency Exits
Galleys/Service
Lavatories
Stowage
Crew seat

Obr. Uspořádání vnitřních prostor .

Obr. Kabina letounu ve dne a v noci.

🔍 Další zdroje

http://www.cs-letectvi.cz/letadla/airbus-a321

http://www.austrian.com/Info/Flightinformation/OurFleet.aspx

http://en.wikipedia.org/wiki/Airbus_A320_family

http://www.mapa-mapy.sk/mapa/dubrovnik-chorvatsko/

http://en.wikipedia.org/wiki/Dubrovnik_Airport

http://www.crocontrol.hr/ATC01

4   Zhodnocení

Mezinárodní konference ITI v Cavtatu je přijoritně zaměřena informačním technologiím a jejím možným aplikacím. Konference ITI 2012 ukázala velikou provázanost mezi informačními technologiemi a leteckou technikou a leteckou dopravou. Jako vybrané články ukazují na konferenci byli nalezeny možnosti aplikace a spolupráce při řešení otázek v oblasti ŘLP.

Účast na mezinárodní konferenci ITI 2012 bylo duležité z duvodu odborného, společenského i organizačního.

Velikým překvapením byla účast zástupcu z celého světa v špičkovém prostředí. Vystoupení měla vasokou úroveň s neformálním přístupem prezentujících při jejich vysoké odborné úrovni.

Společenská i organizační stránka mezinárodní konferenci ITI 2012 byla na vysoké úrovni. Jediným nemilým překvapením bylo oblečení a obutí některých účastníku i po dobu prezentace. Kombinace společenského oblečení se sportovním obutím se mi jevilo jako nevhodné na takové akci.