

Faculty of Informatics, Masaryk University

<http://www.fi.muni.cz/>



- about 2200 undergraduate students
- about 90 PhD students
- 12 full professors, 15 assoc. professors
- first place in the national ranking published in February 2009

The Structure of the Faculty



Departments

- Dept. of Information Technologies
- Dept. of Computer Graphics and Design
- Dept. of Computer Systems and Communications
- Dept. of Computer Science



Research Centres

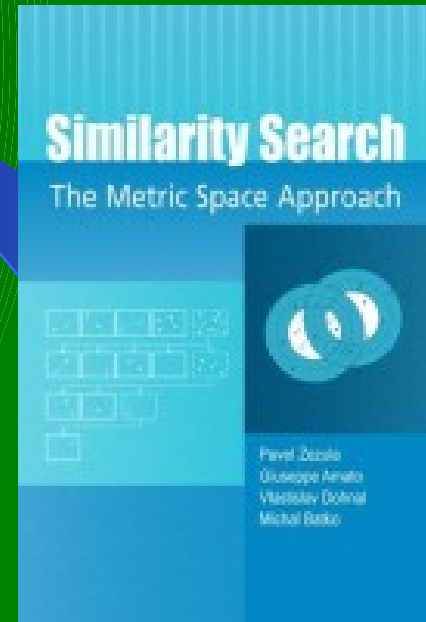
- Centre for Biomedical Image Analysis
- Centre for Natural Language Processing
- Institute for Theoretical Computer Science
- Highly Parallel and Distributed Computing Systems



Digital Data Processing Group



- **prof. Pavel Zezula** (zezula@fi.muni.cz)
- Research team
 - 3 assistant professors, 4 PhD students
- Similarity search in metric spaces
 - MUFFIN (Multi-Feature Indexing Network)
<http://mufin.fi.muni.cz/imgsearch/>
- IBM Shared University Research Award, 2008
- Laboratory of Searching and Dialogue
 - <http://lsd.fi.muni.cz/>



MUFFIN (Multi-Feature Indexing Network)



MUFFIN Image Search - Mozilla Firefox

Soubor Úpravy Zobrazit Historie Záložky Nástroje nápověda

http://mufin.fi.muni.cz/imgsearch/

Věda Přístupy Informace Dokumentace Zařízení Obchody Výrobky Torrent Links WWW development

MUFFIN: The MUFFIN Project MUFFIN Image Search































MUFFIN

Multi-feature Indexing Network

Search in 100 million Flickr images

Keywords Search Random images

Similar images (search: 2,186 ms)

 Visually similar 1.286	 Visually similar 1.286	 Visually similar 1.288	 Visually similar 1.300	 Visually similar 1.333	 Visually similar 1.334	 Visually similar 1.343	 Visually similar 1.343	 Visually similar 1.343	 Visually similar 1.345
 Visually similar 1.318	 Visually similar 1.328	 Visually similar 1.331	 Visually similar 1.333	 Visually similar 1.334	 Visually similar 1.334	 Visually similar 1.342	 Visually similar 1.343	 Visually similar 1.343	 Visually similar 1.345
 Visually similar 1.318	 Visually similar 1.328	 Visually similar 1.331	 Visually similar 1.333	 Visually similar 1.334	 Visually similar 1.334	 Visually similar 1.342	 Visually similar 1.343	 Visually similar 1.343	 Visually similar 1.345

These images are miniature versions of the original ones that come from the site www.flickr.com.
All rights are reserved to the author of the original image, which is directly available on the Flickr site through a hypertext link.

IBM MetaCentrum CoPhIR flickr SAPIR

[about this demo](#) | [MUFFIN project](#) | [MUFFIN architecture](#) | [publications](#) | [team](#) | [mailto](#) | (c) 2008 Masaryk University

Hotovo

Nyní: Slunečno, 21 °C St: 18 °C Čt: 23 °C

Projects and Partners



- **Main International Partners**

- Institute of Information Science and Technologies of the Italian National Research Council
- IBM Research and Development Labs in Israel
- Max Planck Institut für Informatik

- **Projects**

- SAPIR (Search In Audio Visual Content Using Peer-to-peer IR), IST, FP6



- Intelligent Models, Algorithms, Methods and Tools for the Semantic Web Realisation, National Research Program of the Czech Republic

Applied Security Group



- **assoc. prof. Václav Matyáš** (matyas@fi.muni.cz)
- **Research team**
 - 2 assistant professors, 8 PhD students
- **Main research priorities**
 - wireless sensor network security
 - smart card security and related cryptographical applications,
 - biometric authentication
 - use of cryptography for creation and operation of secure systems
- **Round table 2: Trustworthy ICT**
 - Thursday, 10:10



Applied Security Group (2)



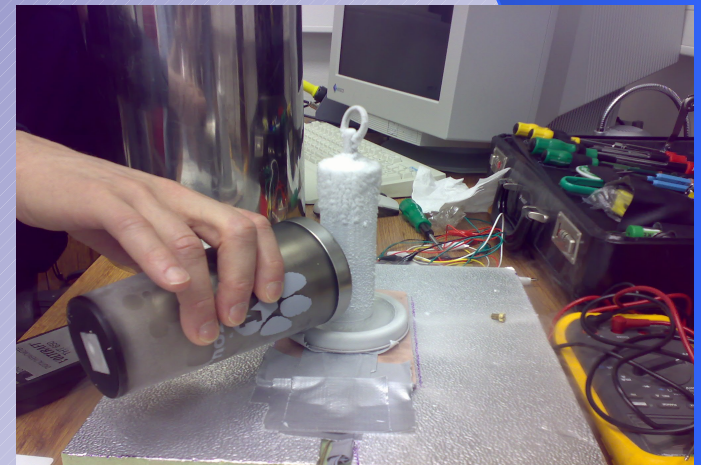
- **Projects**

- Privacy and Identity Management for Community Services (PICOS), FP7
- The Future of Identity in the Information Society (FIDIS), FP6

- **LABAK**, The Laboratory for Applied Cryptography

- **Round table 2: Trustworthy ICT**

- Thursday, 10:10



Computer Networks and GRID Computing



- **Assoc. prof. Luděk Matyska**
(ludek@ics.muni.cz)
- **Research team**
 - 6 assistant professors, 6 PhD students
- **Main research priorities**
 - high-speed networks
 - videoconferencing
 - distributed data storage
 - active networks
 - Grid computing (the first AcessGrid node in Czech Republic)



Computer Networks and GRID Computing (2)



- Projects
 - European Research Network on Foundations, Software Infrastructures and Applications for large scale distributed, Grid and Peer-to-Peer Technologies (CoreGRID), NoE, 6FP
 - Enabling Grids for E-science (EGEE), 6FP

Virtual Reality and Visualization



- **Assoc. Prof. Jiří Sochor** (sochor@fi.muni.cz)

- **Research team**

- 4 assistant professors, 7 PhD students

- **Main research priorities**

- Haptic visualization of molecules
- Virtual hand
- Haptic visualization of raster images
- Collision detection methods in dynamic environments
- Object-oriented graphics and HCI architectures
- Gesture based manipulation with 3D objects
- Navigation and orientation of blind people in buildings



Formal Methods and Verification



- **Prof. Antonín Kučera** (kucera@fi.muni.cz)
- **Research team**
 - 4 professors, 5 assistant professors, 15 PhD students
- **Main research priorities**
 - Stochastic systems, stochastic programming (automated decision support)
 - Distributed model-checking
 - Software verification

STANSE (taking a firm stance on bugs)



Stanse - Static Analysis Framework for C code - Mozilla Firefox

Soubor Úpravy Zobrazit Historie Záložky Nástroje Nápořádá

http://iti.fi.muni.cz/stanse/index.html

Věda Přístupy Informace Dokumentace Zařízení Obchody Výrobky Torrent Links WWW development

Stanse

Taking a firm stance on bugs

- Main
- News
- Documentation
- Download
- Description
- Bugs found
- Screenshots
- People
- Contact
- Local web

Stanse at a glance

Features

- Error-finding tool based on static analysis.
- Target language is C (ANSI C99), but extensible to C#/C++/Java
- Full ANSI C99 support, including most GNU C extensions.
- Modular structure, easy extensibility, fast development.
- Easy to use interface and error path inspection.
- Makefile support and batch execution.

Errors detected

- Memory allocation errors (null pointers, memory leaks, dangling)
- Bad locking discipline (double locks/unlocks, locks not released)
- Interrupt handling (cli/sti-style).
- *And all the errors which can be described by state automata.*

Motivation

The aim of this project is to research, evaluate and implement modern automatic bug finding for programs written in procedural languages (C/C++/C#/Java). This project is done in close collaboration with Siemens AG. The goal is to create a software tool which is able to discover some types of bugs in real-life sized projects (e.g. the Linux

ITI, Faculty of Informatics, Masaryk University

Last modified: Friday, 13-Mar-20

Stanse

File Checking

```
adutux.o.preproc x
size_t bytes_to_write;
size_t buffer_size;
unsigned long flags;
int retval;

do { if (debug >= 2) printk("<7>" "drivers/usb/misc/adutux.c" " " :
dev = file->private_data;

retval = mutex_lock_interruptible(&dev->mtx);
if (retval)
goto exit_nolock;

if (dev->udev == ((void *)0)) {
retval = -19;
printk("<3>" "adutux: No device or device unplugged %d\n",
retval);
goto exit;
}

if (count == 0) {
do { if (debug >= 1) printk("<7>" "drivers/usb/misc/adutux.c" " " :
goto exit;
}

while (count > 0) {
add_wait_queue(&dev->write_wait, &waita);
do { (void)((__typeof__((&get_current()->state)))__xchg((unsigned
do { ({ unsigned long __dummy; typeof(flags) __dummy2; (void)&
if (!dev->out_urb_finished) {
do { ({ unsigned long __dummy; typeof(flags) __dummy2; (void)&

mutex_unlock(&dev->mtx);
if (signal_pending(get_current())) {
do { if (debug >= 1) printk("<7>" "drivers/usb/misc/adutux.c" "
do { (void)((__typeof__((&get_current()->state)))__xchg((unsigned
retval = -4;
```

trace [locations: 23]

- /tmp/linux-2.6.28/drivers/usb/atm/cxacru.o.preproc [423] : in function '...
- /tmp/linux-2.6.28/drivers/usb/image/mdc800.o.preproc [1] : in function '...
- /tmp/linux-2.6.28/drivers/usb/misc/adutux.o.preproc [526] : in function '...
- trace [locations: 22]
- /tmp/linux-2.6.28/drivers/usb/misc/adutux.o.preproc [318] : in function '...
- /tmp/linux-2.6.28/drivers/usb/misc/adutux.o.preproc [593] : in function '...
- /tmp/linux-2.6.28/drivers/usb/misc/adutux.o.preproc [589] : in function '...
- /tmp/linux-2.6.28/drivers/usb/misc/adutux.o.preproc [261] : in function '...
- /tmp/linux-2.6.28/drivers/usb/misc/vstusb.o.preproc [1] : in function 'vst...
- /tmp/linux-2.6.28/drivers/usb/wusbcore/wa-xfer.o.preproc [1] : in functi...
- /tmp/linux-2.6.28/sound/core/oss/pcm_oss.o.preproc [1] : in function 'st...
- /tmp/linux-2.6.28/sound/core/oss/pcm_oss.o.preproc [2715] : in functio...
- /tmp/linux-2.6.28/sound/core/oss/pcm_oss.o.preproc [2729] : in functio...
- /tmp/linux-2.6.28/sound/pci/mixart/mixart.o.preproc [1] : in function 'sr...

First << >> Last | Configure

The lock is unlocked and here is an attempt to unlock it twice.

Hotovo

Nyni: Slunečno, 21 °C St: 1

Other Distinguished Research Groups



- Natural Language Processing
 - Assoc. prof. Karel Pala (pala@fi.muni.cz)
- Quantum Computing
 - Prof. Jozef Gruska (gruska@fi.muni.cz)
- Automated Image Analysis
 - Assoc. prof. Michal Kozubek (kozubek@fi.muni.cz)