### RESUME David Krmpotić, B. Sc. Comp. Sci. | Last update: 2023

### EDUCATION

I was born a few years ago in Slovenia (a nice country between Vienna and Venice).

I studied Computer Science at University of Maribor (Slovenia). Upon entering high school I was awarded a full governmental scholarship for gifted students which I continued to receive during college. College was very useful, learned a lot about fundamental principles of Computer Science and how these principles enable but are not the same as programming.

I graduated in 2005 with work *Extending open-source compilers with domain specific languages*. I was investigating the possibilities of expanding a higher level programming language compiler with an arbitrary domain specific language. I successfully completed the task by expanding open source Mono C# Compiler with Feature Description Language (FDL). The article resulting from this was accepted and presented at ITI 2005 international conference in Dubrovnik, Croatia. I didn't want to continue with PhD since I needed a break from education. I tried PhD in Bioinformatics later but didn't conclude. I also studied one year of Physics to make sure I like computing a bit more and to brush up on classical physics. My primary school physics teacher was the best in known Universe and he actually introduced me to programming as well.

A list of completed courses from my CS undergraduate studies is attached.

In 2003 I spent one semester (five months) at Barcelona School of Informatics at Technical University of Catalonia (UPC) as a foreign exchange student. In summer 2003 I completed three months internship at Campinas University (UNICAMP) in Sao Paulo, Brazil. I naturally took the opportunity to learn Spanish and Portuguese while being an exchange student.

In recent couple of years I established a family with my loving wife Andreja and have also been able to follow my deep interests in technology and its surrounding context. I mostly explore distributed systems in various forms as well as limits to human knowledge and understanding and how everything may fit together. The main conclusion is that **everything is connected !** :)

I am always on the look for new friendships — online or offline, to be based on exchange of useful information and mutual improvement. I am currently going through some personal shifts in thinking and behaviour which I noticed happen for me around every decade as I progress in life and build my understanding of things I am interested in or gain new interests.

#### SOME 'FORMAL RECOGNITIONS'

- Won the national competition for best computer program with my advanced version of Tetris written in Pascal running on MS-DOS (that was in primary school).



- In high school I received a 2nd award on national physics competition and 3rd in computer programming competition.

- In college I was awarded a prize of Chancellor of University of Maribor as the best student in generation in all technical faculties (*rektorjeva nagrada*).

- Received a 3rd award for the best idea at Microsoft's national competition (Diamind template - which help with learning mental Day-of-week calculations).



**2006** - First prize in Ljubljana at annual competition for best business plan - that included some funding and was provided by LUI *(Ljubljanski Univerzitetni Inkubator)*.

**2006** - Received funding for project 60Words from TiPovej (organization that helps young people realize their ideas)

**2010** - Received 1st prize as a company / project Odpiralni Časi at Simobil (second largest mobile operator in SLO) Android competition among 50 competing applications.

**2010+** Noticed that formal awards are not that interesting, it is about actual practical great work that one believes in which may or may not be recognised readily or can be recognised a bit later. I went on the **uniqpath** and I'm pushing forward step by step with like-minded friends.

# **EXAMPLES OF PRACTICAL PROJECTS COMPLETED FOR UNDERGRADUATE COMPUTER SCIENCE DEGREE**

- Implementation of huffman and adaptable huffman compression algorithm (C++)
- Compressing medical images with simple lossless image compression algorithm (C++)
- Implementation of DCT compression (C++)
- Model and procedures for calculating inverse transformations of 6 degrees-of-freedom industrial robot (for special Robot modeling environment developed at University of Maribor)
- Implementation of A\* algorithm which finds the shortest route between cities including the route visualisation on the map.



- Algorithm (Min/Max with Alpha-Beta prunning) for playing the game "Connect 4" against other students' implementations and computer.
- Implementations of various simple algorithms in Prolog (quicksort, A\*, the water pitcher problem)
- "Windows explorer clone" with additional features (like splitting and combining large files, automatic refresh when file structure is changed) created in Visual Studio 6.0 (MFC, C++).
- A modeler (MFC, OpenGL) for modeling B-Splines and NURBS surfaces. Implementation of Phong and Gouraud shading, bitmap texture mapping and procedural textures (noise) generation.



	5 words a day. Great! > Charles Ponzi
Home FAQ About	
What is 60Words ? 60Words is an exciting new tool that helps you master languages faster! Learning new vocabulary has never been more effective and enjoyable.	Username Password ii forget my password Log In!
	Signup (free & easy)
About   Terms of Use   Privacy Policy © 2007 60Words	Feedback

- Exact solution for Traveling Salesman Problems using dynamic programming (C++)
- Approx. solution for large TSPs using evolutional algorithms. Added visual comparison between obtained solution and exact solution from internet database. (C++)
- Stack-based calculator
  - Application in Matlab for analyzing sound and image signals. Including:
    - displaying the spectrum of a signal
    - implementation of Short-Time Fourier Transform and Fast Fourier Transform
    - applying different filters to a picture using convolution
    - recognizing objects in a picture
- Simulation of a Producer/Consumer algorithm
- Java applet for simulating defragmentation of memory as processes are coming in and out
- Some LISP problems, top one being "LISP interpreter in LISP"
- Solving the problem of towers of hanoi by a *simulation* of recursion (pretending that it doesn't exist in C++ and implementing it using stacks)
- Scanner, (recursive descent) parser and syntactical analyzer for a simple domain specific language for robot movement specification (C++)

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- Simple XML parser (C++)
- 3D model of a complicated object (Big Ben tower in London) in Mathematica
- Linker for custom object modules (demonstrating of the process of linking) (C#)
- Some basic electronic circuits using programmable microprocessors
- Simulation written in .NET which shows ant movements. Ants searching for food by following pheromone trails other ants left, demonstrating *Swarm Computing* approach.



[Collective Intelligence - Ants searching for food by following pheromone trails of other ants]

#### COMPUTER SCIENCE AND KNOWLEDGE NETWORKS

— uniqpath <u>https://uniqpath.com</u>

#### - DMT SYSTEM https://dmt-system.com

[ currently, long-term, for a long time already ]

**DMT SYSTEM** is best understood as a set of always-running processes, one per device. The user has total control but also full responsibility for correct setup and specification of his or her needs. You probably have to be *younger generation* to have the available time and mental flexibility to get involved. It starts a bit slow but then you're probably "hooked" for life because this tech is great, at least this is what others say. I can more or less confirm.

**DMT ENGINE** is like a canvas to paint desirable software-enabled functionalities on top. The more a user invests into the exploration of DMT SYSTEM, the more they stand to gain. Knowledge, insight, money, fame, immortality! Pick a few but not all. Can't have it all!



**uniqpath** is a knowledge network which is slowly emerging through online and offline aspects with curious people collaborating and sharing actionable timely information and insights. Online aspect of uniqpath is powered through independent DMT nodes and requires dedicated technical participation. There is also a simpler managed version with the same functionality.

We are a small team and community because this works best for us at the moment. We grow every year and we plan to keep thriving in any environment for many interesting years. Everyone passionate and curious can always find a way to collaborate and share knowledge and insights through this philosophy. We currently have one **Knowledge Network** which explores Smart Contract designs using the example of a semi-failed DeFi protocol (WIP, RIP?).





*From 2008 until 2012* I have been mostly coding and managing the project **Odpiralni Časi** for which I have been the founder. Odpiralni Časi is a local search engine with focus on accurate opening hours. It was quite innovative for that time and it showed early users of smart phones the capabilities of GPS module. We were the #1 iPhone app in the region for a long time.



At first we obtained a lot of online data, then lead people to update their information themselves but the plan was for this to become the central point where **everyone** would regularly update their opening times, from bar owners to shops and everyone else. *Yeah right!* :*P* 



Odpiralni Časl © 2009 = O storitvi = Za lastnike = Pogosta vprašanja = Dodatek za brskalnik = Pravno obvestilo = Kraji = Kontakt

#### **GRECO** (Aug 2006 - Jun 2008)

While at Greco (a Slovenian software development company), I lead the development of a intuitive VoIP Call Center for a demanding customer. The application was called LiveProfiler and enabled our customer to run direct marketing campaigns for large customers like Microsoft, Honda and Diners Club. We also developed ThoughtBag for which **mr. Tadej** gave the much needed inspiration and guidance. ThoughtBag is still used at some important places.



#### **IPAK INSTITUTE** (2014-)

Eppur si muove! — IPAK se kreie! — [ The OG Knowledge Network ]



Prof. Dr. STANKO BLATNIK, director

#### Cosylab <u>www.cosylab.com</u> (May 2005 to Sept 2005)

Cosylab is a very respected Slovenian / global company with main focus in control systems for particle accelerators, futuristic medical devices and maybe even fusion systems, possibly!

While at Cosylab I developed a prototype application for showing terrain maps on handheld devices (smartphones didn't yet exist). Technology used: Microsoft Compact .NET framework. So basically a pilot project not related to physics that much... but at least I was close to real physicists who were trying to learn Computer Science (hah! )

I joined Cosylab after finishing my studies and later decided to leave to pursue my own project. My project went nowhere but I learned an important lesson. Cosylab went everywhere and I'm happy about them, especially for the strange business / science genius that started it.



#### SOLUTIONS +

#### Fusion and the Industry: Today and Tomorrow

DAVID PAHOR

21. Dec 2022

One of the longest-standing jokes in experimental physics has been that affordable fusion energy is just around the corner – with the punchline that the corner lies twenty-five years in the future. States and international consortiums of countries have been investing large sums of money in prominent scientific fusion projects for years. Among these are the British Joint European Torus (JET), South Korea's KSTAR reactor, the international ITER fusion project, Germany's Wendelstein 7-X (W7-X) stellarator, and China's Experimental Advanced Superconducting Tokamak (EAST).



#### **OPEN SOURCE 1**

#### Ethereum (2014-)

All Solidity blockchain smart contracts in existence use <u>my syntax highlighter</u> which works flawlessly without any errors. I was quite stubborn on making it 100% perfect (this is indeed possible in some areas and I chose such an area or it chose me). Millions of people have benefited from this work since **Solidity** is the main programming language for the future of programmable money and other immutable / fair programs. It feels good to having provided something that impacts every smart contract developer and works reliably and silently in the background on every platform (GitHub, various editors). It is obviously a distinct and much easier contribution from designing a language itself. I just faithfully replicated the language design so that it is represented in the editor and elsewhere correctly (developers see the best possible colors for different building blocks of programmable money code snippets).

```
Staking.sol
     // Stakers set which migrator(s) they want to use
        pping(address => mapping(address =>
                                                    bool)) public stakerAllowedMigrators;
       apping(address => bool) public greylist;
     bool public migrationsOn; // Used for migrations. Prevents new stakes, but allows LP and reward withdrawals
bool public stakesUnlocked; // Release locked stakes in case of system migration or emergency
     bool public withdrawalsPaused; // For emergencies
bool public rewardsCollectionPaused; // For emergencies
     bool public stakingPaused; // For emergencies
     struct LockedStake {
         bytes32 kekId;
          uint256 startTimestamp;
          uint256 liquidity;
          uint256 endingTimestamp;
         uint256 lockMultiplier; // 6 decimals of precision. 1x = 1000000
     3
     /* ======== MODIFIERS ============ */
       odifier isMigrating() {
    require(migrationsOn == true, "Not in migration");
     }
     modifier notStakingPaused() {
          require(stakingPaused == false, "Staking paused");
     }
     modifier updateRewardAndBalance(address account, bool syncToo) {
          _updateRewardAndBalance(account, syncToo);
     3
     /* ======= CONSTRUCTOR ======== */
         address _rewardToken,
address _stakingToken,
address _deiAddress,
address _veDeusAddress
     ) {
          rewardToken = IERC20(_rewardToken);
stakingToken = IUniswapV2Pair(_stakingToken);
          veDeus = IveDEUS(_veDeusAddress);
          // 10 DEUS a day
          rewardRate = 0; // (uint256(3650e18)).div(365 * 86400);
```

#### **OPEN SOURCE 2**

#### **DMT SYSTEM** (2017-)

DMT is also open source but with limited open access to documentation, for this we have to get to know people a little bit better (they usually join our yearly meetups and we go from there). All open-source projects bump into sustainability issues which are complex and money is only a small part of the equation. Usually developers get overwhelmed with support requests while getting absolutely nothing in return, except possibly "some satisfaction". This can work but more complicated projects are ... more complicated.

Everything is complicated but at some point things simplify a bit, then get complex again!



#### [v1.0 of DMT SYSTEM in 2020]

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[ A Glitch in The Matrix ]

#### STUDENT AND HIGH SCHOOL WORK

Before graduating I worked on a few projects for electrical engineering companies:

- Application for storing information on projects. Its main features are automatic Word documentation generation and option of updating hours spent on projects across the network by employees. Used technologies: C#, ADO.NET, SQL. Time spent: two years.
- Application for calculation of illumination and light sources arrangement for rooms. Used technologies: C#. Time spent: two months.
- Application for calculation of various electrical components' parameters for buildings (wire type and diameter, fuses etc.). Used technologies: C#. Time spent: one month.

#### **OTHER WORK EXPERIENCE**

In summer of 2004 I was working in Food & Beverage in Yellowstone National Park, USA. A letter of recommendation from my manager is attached.



#### REFERENCES

Tadej Gregorčič (entrepreneur, friend and ex. co-worker);

Stanko Blatnik, phD (professor, entrepreneur);

Marjan Mernik, phD (professor and my diploma mentor);

#### LETTERS OF RECOMMENDATION

 Marjan Mernik (professor at University of Maribor, Slovenia and University of Alabama at Birmingham, USA) written in 2004, before graduation

To Whom It May Concern

I hereby confirm that David Krmpotic is currently a student at University of Maribor, Faculty of Electrical Engineering and Computer Science, Slovenia. He enrolled into our 5 year undergraduate programme on computer science in the year 2000/01. At this moment he finished all exams towards undergraduate degree. Moreover, he finished with practical work on diploma thesis under my supervision. He was exploring the possibilities of developing domain-specific languages in a multi-language execution environment CLR (Common Language Runtime). Therefore, the only step that he needs to successfully finish undergraduate study is diploma thesis presentation. This will be done when he returns back to Slovenia.

David Krmpotic is one of our best students we had in our programme. His grade average is 9.67 (we are using the following grading scale: 6 - sufficient knowledge, 7 - satisfactory knowledge, 8 - good knowledge, 9 - very good knowledge and 10 - excellent knowledge). His abilities to learn are excellent while on the other hand is a hard worker, too. He finished all exams for second and third scholar year in one year (2001/02). David's personal characteristics are excellent, too. His attitude and commitment to serve in society are admirable.

Marjan Mernik, Ph.D., Associate Professor University of Maribor Faculty of Electrical Engineering and Computer Science

## • Akebo Yamakami (professor at State University of Campinas - UNICAMP, São Paulo, Brazil)

To Whom It May Concern

I hereby confirm that David Krmpotic has taken part in the exchange of students arranged by the International Association for the Exhange of Students for Technical Experience (IAESTE) under my supervision, from july/01/2003 to september/20/2003, at "Faculdade de Engenharia Elétrica e de Computação" of State University of Campinas (UNICAMP), São Paulo, Brasil. Moreover I confirm that David has finished successfully all the job we scheduled, and showed a very good application to work and great ability to learn new material.

Akebo Yamakami, Ph.D. DT-FEEC-UNICAMP

#### • Jesse Augustine (food & beverage manager - Yellowstone National Park)

To Whom It May Concern

I have had the pleasure of working as David Krmpotic's manager at a park resort this summer of 2004. As our company does not permit me to write a formal letter of reference it is my pleasure to write a personal recommendation. David has always been willing to pick up extra shifts which has made my job much easier. In addition to that he has always worked hard and has brought solutions to the problems in the workplace. As a testimony to his hard work I would mention that he has been promoted from a cafeteria line serving position to a dinning room bussing position. His attendance and punctuality record has been exemplary, and I would recommend him for any position. For more information please contact me personally at (307) 242-9975.

Respectfully, Jesse Augustine

#### **ENDURANCE (SPORTS)**

I'm perhaps not that natural at sports and most sports are really boring to me, especially social ones (I know!). I figured I like endurance sports alone or in very small groups and did some in the past. Now trying to return back to doing more again. Motivation goes up and down. Need to do more for keeping the motivation more stable. I heard one can hack Dopamine ...

Previously I did:

- Quite a bit of distance cycling
- Run a marathon or two
- Summit Kilimanjaro, Elbrus, Aconcagua and Triglav (in that order)



You can do a lot in a lifetime If you don't burn out too fast You can make the most of the distance First you need endurance First you've got to last Marathon — Song by Rush

#### UNDERGRADUATE COURSES WITH GPA

Scale: 10 - excellent knowledge | 9 - very good knowledge | 8 - good knowledge |

7 - satisfactory knowledge | 6 - sufficient knowledge

I studied to get good grades. Isn't this the point of study? :P



BUILDING KNOWLEDGE NETWORKS

[MY BUSINESS ... CARD]

 $\sim$  IT INCLUDES EMAIL WITH ADVANCED SPAM PROTECTION  $^{\rm TM}\sim$ 

[CONTACT]

David Krmpotić, BSC. Computer Science david at **uniqpath.com**