

# Petar Maric

jobs@petarmaric.com

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## Summary

An avid Open Source software supporter with a PhD in Applied Computer Science. Particularly fond of Python and Django powered web development. Interested in research or development with a multi-disciplinary team. Passionate about working on state-of-the-art technologies and making cool stuff.

## Selected skills

Python, Django, web development, model driven development, system analysis, software design, distributed computing, metaprogramming, system administration, configuration management systems (Salt), deploying monitoring (Graphite, Munin), deploying monitoring dashboards (Grafana), web spiders, parsers, scientific computing, numerical analysis, web application security, information visualization, LaTeX, Sphinx, Docker, Packer, Vagrant, RabbitMQ, Redis, Celery, HDF5, Supervisor, SQL, Java, C, PHP, JavaScript.

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## Education

### Faculty of Technical Sciences, University of Novi Sad

PhD in Electrical and Computer Engineering - Applied Computer Science, 2009 - 2016

GPA: 10.00 out of 10

Thesis: *A hybrid software architecture for supporting the harmonic coupled finite strip method*

Analyzed the problem of solving the characteristic equations of the basic functions, as defined by the harmonic coupled finite strip method. It's found that with each increasing mode the characteristic equation root-finding error grows exponentially for all but the most trivial edge boundary conditions, due to the hyperbolic functions involved. These large root-finding errors will lead to severe accuracy issues when computing basic functions and their integrals, especially for higher modes. A hybrid method for accurately solving characteristic equations and obtaining the required integrals is presented, along with its reference Open Source implementation. An extensive test suite has been developed to verify the hybrid method and its implementation for all the presented boundary conditions and integrals.

Research areas:

Harmonic Coupled Finite Strip Method, distributed computing, numerical analysis, metaprogramming

Projects:

[2011 - 2018] "Computational Mechanics in Structural Engineering", ON174027, Ministry for Science and Technology, Republic of Serbia.

### Faculty of Technical Sciences, University of Novi Sad

Master of Electrical and Computer Engineering - Applied Computer Science, 2003 - 2009

GPA: 9.11 out of 10

Thesis: *Django based framework for online opinion research systems*

Extendable, scalable and highly reliable model driven framework for creating online opinion research systems. Supports safe, expandable, accurate and updateable respondent profiles; changing opinions while preserving previous versions; user-friendly model driven population filtering; managing opinion metadata; advanced privacy, security and integrity measures.

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## Experience

### fsm\_damage\_analysis (Open Source)

Project Founder, March 2018 - Present

Created a Python powered library/console tool for damage analysis and visualization of the parametric model of buckling and free vibration in prismatic shell structures, as computed by the fsm\_eigenvalue project.

[https://bitbucket.org/petar/fsm\\_damage\\_analysis](https://bitbucket.org/petar/fsm_damage_analysis)

### **fsm\_strip\_thickness\_analysis** (Open Source)

Project Founder, March 2018 - Present

Created a Python powered library/console tool for strip thickness-dependent visualization and modal analysis of the parametric model of buckling and free vibration in prismatic shell structures, as computed by the fsm\_eigenvalue project.

[https://bitbucket.org/petar/fsm\\_strip\\_thickness\\_analysis](https://bitbucket.org/petar/fsm_strip_thickness_analysis)

### **dynamic\_pytables\_where\_condition** (Open Source)

Project Founder, February 2018 - Present

Created a Python powered library that dynamically constructs a PyTables where condition from the supplied keyword arguments.

[https://bitbucket.org/petar/dynamic\\_pytables\\_where\\_condition](https://bitbucket.org/petar/dynamic_pytables_where_condition)

### **fsm\_load\_modal\_composites** (Open Source)

Project Founder, February 2018 - Present

Created a Python powered library that loads modal composites from the file containing the parametric model of buckling and free vibration in prismatic shell structures, as computed by the fsm\_eigenvalue project.

[https://bitbucket.org/petar/fsm\\_load\\_modal\\_composites](https://bitbucket.org/petar/fsm_load_modal_composites)

### **fsm\_strip\_length\_analysis** (Open Source)

Project Founder, February 2018 - Present

Created a Python powered library/console tool for strip length-dependent visualization and modal analysis of the parametric model of buckling and free vibration in prismatic shell structures, as computed by the fsm\_eigenvalue project.

[https://bitbucket.org/petar/fsm\\_strip\\_length\\_analysis](https://bitbucket.org/petar/fsm_strip_length_analysis)

### **acs\_student\_mail\_harvester** (Open Source)

Project Founder, January 2018 - Present

Created a Python powered library/console tool for harvesting email addresses of our ACS students during their first week of ACS lab coursework.

[https://bitbucket.org/petar/acs\\_student\\_mail\\_harvester](https://bitbucket.org/petar/acs_student_mail_harvester)

### **fsm\_modal\_analysis** (Open Source)

Project Founder, January 2018 - Present

Created a Python powered library/console tool for visualization and modal analysis of the parametric model of buckling and free vibration in prismatic shell structures, as computed by the fsm\_eigenvalue project.

[https://bitbucket.org/petar/fsm\\_modal\\_analysis](https://bitbucket.org/petar/fsm_modal_analysis)

### **Official Arch Linux mirror** (Open Source)

Project Founder, December 2017 - Present

Created and managing the official Arch Linux mirror for Serbia, sponsored by the Faculty of Technical Sciences, University of Novi Sad.

<http://arch.petarmaric.com/>

### **physical\_dualism** (Open Source)

Project Founder, December 2017 - Present

Created a Python powered library that approximates the natural frequency from stress via physical dualism, and vice versa.

[https://bitbucket.org/petar/physical\\_dualism](https://bitbucket.org/petar/physical_dualism)

### **fsm\_eigenvalue** (Open Source)

Project Founder, September 2017 - Present

Created a Python powered library/console tool implementing a generalization of eigenvalue problem within the harmonic coupled finite strip method, used for parametric modeling of static and dynamic inelastic buckling, free vibration, damage and failure in prismatic shell structures.

[https://bitbucket.org/petar/fsm\\_eigenvalue](https://bitbucket.org/petar/fsm_eigenvalue)

### **MIR** (Open Source)

Project Founder, August 2017 - Present

Created the Mesh Intermediary Representation (MIR) specification, an open standard for describing a platform-neutral data format for long-term storage and interchange of mesh-like data. It has also been designed to serve as an intermediary step when converting the mesh-like data between different computational mechanics application formats.

<https://bitbucket.org/petar/mir>

### **Faculty of Technical Sciences, University of Novi Sad**

Assistant Professor, December 2016 - Present

Responsible for teaching Programming languages and data structures to hundreds of future engineers, their evaluation and grading.

### **acs\_student\_attendance** (Open Source)

Project Founder, December 2016 - Present

Created a Python powered library/console tool for analyzing and reporting the lab attendance of our ACS students.

[https://bitbucket.org/petar/acs\\_student\\_attendance](https://bitbucket.org/petar/acs_student_attendance)

### **Official Ubuntu Archive mirror** (Open Source)

Project Founder, November 2016 - Present

Created and managing the official Ubuntu package archive mirror for Serbia, sponsored by the Faculty of Technical Sciences, University of Novi Sad.

<http://rs.archive.ubuntu.com/> and <http://ubuntu.mirror.ftn.uns.ac.rs/archive/>

### **packer-acs-templates** (Open Source)

Project Founder, October 2016 - Present

Created an automated Packer based system for building VirtualBox images, which have been preconfigured to make coursework easier for our ACS students.

<https://bitbucket.org/petar/packer-acs-templates>

### **export\_beam\_integrals** (Open Source)

Project Founder, September 2015 - Present

Created a distributed system for computing and exporting beam integrals of all 6 supported beam types, as defined in the beam\_integrals project.

[https://bitbucket.org/petar/export\\_beam\\_integrals](https://bitbucket.org/petar/export_beam_integrals)

### **Official Ubuntu CD images mirror** (Open Source)

Project Founder, August 2015 - Present

Created and managing the official Ubuntu CD images mirror for Serbia, sponsored by the Faculty of Technical Sciences, University of Novi Sad.

<http://rs.releases.ubuntu.com/> and <http://ubuntu.mirror.ftn.uns.ac.rs/releases/>

### **Official CTAN mirror** (Open Source)

Project Founder, August 2015 - Present

Created and managing the official CTAN (Comprehensive TeX Archive Network) mirror for Serbia, sponsored by the Faculty of Technical Sciences, University of Novi Sad.

<http://ctan.mirror.ftn.uns.ac.rs/>

### **simple\_plugins** (Open Source)

Project Founder, August 2013 - Present

Created a simple to use Python powered plugin framework, inspired by the work of Marty Alchin.  
[https://bitbucket.org/petar/simple\\_plugins](https://bitbucket.org/petar/simple_plugins)

### **friendly\_name\_mixin** (Open Source)

Project Founder, August 2013 - Present

Created a Mixin class for extracting friendly names from Python classes.  
[https://bitbucket.org/petar/friendly\\_name\\_mixin](https://bitbucket.org/petar/friendly_name_mixin)

### **nose\_extra\_tools** (Open Source)

Project Founder, August 2013 - Present

Created more testing goodies for 'nose.tools'. Nose extends the test loading and running features of Python 'unittest', making it easier to write, find and run tests.  
[https://bitbucket.org/petar/nose\\_extra\\_tools](https://bitbucket.org/petar/nose_extra_tools)

### **beam\_integrals** (Open Source)

Project Founder, June 2012 - Present

Created a Python powered library/console tool for determining beam integrals of all 6 supported beam types, as described by prof. D.D. Milašinović in "The Finite Strip Method in Computational Mechanics".  
[https://bitbucket.org/petar/beam\\_integrals](https://bitbucket.org/petar/beam_integrals)

### **telenor\_web2sms** (Open Source)

Project Founder, October 2011 - September 2012

Created a Python powered library/console tool for sending SMSs through the Telenor WEB2SMS web app.  
[https://bitbucket.org/petar/telenor\\_web2sms](https://bitbucket.org/petar/telenor_web2sms)

### **mdm\_compare** (Open Source)

Project Founder, February 2011 - Present

Created a Python powered library/console tool for comparing 2 experiment results stored in the MDM file format. MDM is a readable text format suitable for storing and exchanging experiment results, used for years by our university research team and most of our software.  
[https://bitbucket.org/petar/mdm\\_compare](https://bitbucket.org/petar/mdm_compare)

### **CitiDexLI, Inc.**

Software Developer, January 2010 - December 2016

Working as a consultant with Prof. Michael Dohan and his team to improve their popular information directory business, started in 1997. As the only developer been adding new functionality and maintaining existing codebase, whilst taking on administrative roles and keeping the client's cost at minimum. Came to an environment using several different systems spread over multiple codebase and developer generations, with some data duplicated across systems causing occasional inconsistencies. Working to unify the entire codebase into a centrally managed Django based system.

Introduced resource monitoring with improved alerts/notifications, created reliable backup policies, continue to maintain office, legacy and production servers while systematically improving their security. Planning and building a new, modern Cloud based infrastructure, aiming to cut the OPEX in half while improving performance and resolving scalability issues.  
<http://www.citidex.com/>

Found and reported a Horde/IMP related remote code injection vulnerability in Plesk 8.6 (not credited)  
<http://kb.parallels.com/en/113374>

### **Faculty of Technical Sciences, University of Novi Sad**

Teaching Assistant, October 2009 - December 2016

Responsible for teaching Programming languages and data structures, Object Oriented Programming, Computer Architecture and Compilers to thousands of future engineers, their evaluation and grading.

## **High Score Society**

Software Developer, August 2009 - October 2009

Worked as a consultant to improve the Django powered gamer community and prepare it for launch. Updated project code to Django 1.1, fixed bugs, refactored and cleaned up code, implemented new features, integrated the new design, improved scalability by moving CPU and network intensive operations out from the HTTP request/response lifecycle.  
<http://www.highscoresociety.com/>

## **metaTED (Open Source)**

Project Founder, May 2009 - Present

Created a Python powered tool for easier downloading of all TED talks. metaTED screen-scrapes TED HTML pages and creates several metalinks of all talks, varying in both the quality levels and possible talk groupings by directory.  
<http://bitbucket.org/petar/metated/>

## **mesawarati (Open Source)**

Software Developer, March 2009 - April 2009

Worked as a consultant to implement a Django based photo gallery website that supports content in multiple languages. Fixed bugs, implemented i18n-ized content, refactored code, contributed patches to related Open Source projects.  
<http://code.google.com/p/mesawarati/>

## **dreamy-trac (Open Source)**

Project Founder, July 2008 - August 2011

Developed a system to automatically install and manage Trac on DreamHost shared hosting.  
<http://code.google.com/p/dreamy-trac/>

## **opinion-extractor (Open Source)**

Project Founder, March 2008 - May 2009

My master thesis project.  
<http://code.google.com/p/opinion-extractor/>

## **Feedjack (Open Source)**

Software Developer, October 2006 - July 2007

Feed aggregator Django app. Fixed bugs, implemented i18n support, contributed Serbian localization.  
<http://www.feedjack.org/>

## **Django (Open Source)**

Software Developer, August 2005 - Present

Early adopter and contributor to Django. Fixed bugs, helped resolve security issues with Hudson continuous integration server in late October 2010, implemented and improved i18n support, improved Windows support, contributed Serbian localization, managed the Serbian localization team.  
<http://www.djangoproject.com/>

Manager of the Django LinkedIn group since October 2009.  
<http://www.linkedin.com/groups?gid=50788>

Created a “Django syncmedia” proposal for Google Summer of Code 2009. Even though the proposal hasn’t been accepted then, over the next few years most of the ideas have been implemented in Django.  
<http://gsoc2009.petarmaric.com/>

## **Faculty of Technical Sciences, University of Novi Sad**

Software Developer, March 2004 - January 2006

Worked as a consultant on the schools web site.

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## Languages

Native Serbian speaker.

Fluent in English.

Basic French.

## Hobbies

Serbian and Japanese culture, photography, hiking, home repairs, cooking.