

# FABRICIO MARTINS MAZZOLA

## PERSONAL INFO

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**Date of Birth:** 04/05/1996

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**Citizenship:** Italy and Brazil

## EDUCATION

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**Federal University of Rio Grande do Sul, Porto Alegre**  
Ph.D. in Computer Science

*March 2019 - Present*

**Federal University of Rio Grande do Sul, Porto Alegre**  
BSc degree in Computer Science. 3.54 Overall GPA

*March 2014 - December 2018*

## SUMMARY

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I am a first year Ph.D. student at the Informatics Institute of UFRGS - Federal University of Rio Grande do Sul. My PH.D. research area is computer networks and networked systems, mainly focusing on Internet measurements, Internet cartography, and network analytics. In the past, I have worked with Software Defined Networking (SDN) and data-center networks. I am currently investigating the main connectivity characteristics and evolution of the Brazilian IXP ecosystem, focusing on identifying, quantifying, and analyzing the adoption and impact of remote peerings in different IXPs over the country. My plans for future research include investigating ways to evolve the Internet cartography of peering interconnections leveraging the opportunities enabled by IXPs, increasing knowledge about network redundancy and coverage

## SKILLS EXPERTISE

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### Programming Languages

- C++, C, Python

### Computer Networking

- TCP/IP, Software-defined Networking (SDN), Open vSwitch, OpenFlow, Internet cartography, Routing, Interconnection, IXP

### OSes Platforms

- Linux, MAC OS X, Windows

### Tools

- Vim, Git, Latex

### Languages

- Portuguese (Native), English (Fluent), Spanish (Intermediate), French (Beginner)

## PROJECTS

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### **GT-Ipe Analytics**

Transforming raw monitoring data to generate valuable information for network management. The adoption of multiple monitoring techniques increased the availability of raw data. However, state of the art is still limited in terms of in-depth analysis and inferences about network behavior, given the scale and complexity of WANs and the volume/heterogeneity of data. This project investigates methods to analyze, in a longitudinal way, datasets that have been collected from the IPE backbone (Brazilian academic network) for many years. A concrete product will be a web-based system that will provide inferences from the combination of multiple large datasets available, internal and external to the organization. The inferences will help improve performance and security of the backbone network operation, traffic engineering and planning.

### **Phoenix: towards a robust and survivable SDN architecture**

SDN separates control and data planes, but independency between forwarding devices and remote controllers introduces challenges on survivability that is, how to preserve network functionality under failures and attacks. This project conducts research based on five main pillars: (a) a comparative study of existing mechanisms and the subsequent creation of a taxonomy of related literature strategies; (b) novel algorithms for controller placement; (c) resilience mechanisms for communication between the control and data planes via alternative channels; (d) development of recovery mechanisms to ensure compliance with high-level policies; and (e) incorporation of security mechanisms to the control plane. These mechanisms are intelligently combined into a novel and robust architectural model.

## WORK EXPERIENCE

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### **Teaching Assistant — UFRGS**

*03/2019 - 07/2019*

I was the teaching assistant for an undergraduate level course Computer Networks.

### **Brazilian Academic Network (RNP), Porto Alegre**

*05/2017 - 04/2019*

*Research Assistant*

- Researched and implemented various aspects on activities related to network measurements and network analytics, on the project GT-IP-Analytics.

### **National Council for Scientific and Technological Development (CNPq), Porto Alegre**

*07/2015 - 12/2017*

*Research Assistant*

- Researched the impact of SDN switch memory architecture on the latency to add, modify and remove OpenFlow rules, on the project Phoenix: towards a robust and survivable SDN. Advisor: Prof. Marinho Barcellos.

## SELECTED PUBLICATIONS

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**Fabricio Mazzola**, Daniel Marcon, Miguel Neves e Marinho Barcellos. Ta na Hora: analisando a latncia de modificao de tabelas de fluxo em arquiteturas de switches SDN. In SBRC 2018, Campos do Jordao, Brazil.

Daniel Marcon, **Fabricio Mazzola**, e Marinho Barcellos. Achieving Minimum Bandwidth Guarantees and Work-Conservation in Large-Scale, SDN-Based Datacenter Networks. In Elsevier Computer Networks (COMNET)

Miguel Neves, Rodrigo Oliveira, **Fabricio Mazzola**, Daniel Marcon, Luciano Gaspar, e Marinho Barcellos. Contando os Segundos: Avaliao de Estratgias de Domnio Temporal para a Gerencia de Regras em Redes SDN. In SBRC 2016, Salvador, Brazil.

## POSTERS

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**Fabricio Mazzola**, and Marinho Barcellos Are You Really There? Analyzing the Deployment of Remote Peering in the Brazilian IXP Ecosystem. In ACM IMC 2019, Amsterdam, Netherlands.

**Fabricio Mazzola**, Lucas Muller, Rodrigo Oliveira and Marinho Barcellos A Decade of Backbone Evolution of the Brazilian Academic Network: observations from the perspective of the routers. In PAM 2019 Ph.D School, Puerto Varas, Chile.

## GRANTS AND FELLOWSHIPS

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Doctorate's scholarship - 03/2019 - 03/2023

Scholarship from the Coordination for the Improvement of Higher Education Personnel (CAPES), Brazil, to support studies during the Ph.D

Research scholarship - 05/2017 - 04/2019

Scholarship from the Brazilian National Research and Education Network (RNP), Brazil, to work on the project GT-IP-Analytics on activities related to the network analytics and Internet measurements. Supervisor: Prof. Marinho Barcellos

Undergraduate scholarship - 07/2015 - 12/2017

Scholarship from the National Council for Scientific and technological Development (CNPq), Brazil, to work in the Phoenix project on activities related to SDN research. Supervisors: Prof. Marinho Barcellos

Travel Grant award PAM 2019 Ph.D School.

Travel Grant award ACM IMC 2019 .

## SERVICES

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Local Organization Committee: SIGCOMM'16

## PRIZES

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- 2011 - Honorable mention on the UNIVATES Mathematics Olympiad
- 2010 - 1st place on the III UNIVATES Mathematics Olympiad
- 2010 - Best of school on the UNIVATES Mathematics Olympiad.
- 2009 - Honorable mention on the UNIVATES Mathematics Olympiad