Pedro da Costa Abreu Júnior

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"Nullius in verba"

Education

2018–2024 **MS in Computer Science**, *Purdue University*, IN, Advised by Dr. Benjamin Delaware.
Translating GADTs from OCaml to Coq

2011–2017 **Bachelor Degree in Computer Science**, *University Of Brasilia (UnB)*, Brasilia.
Honours Advised by Dr. Rodrigo Bonifácio, specified and proved correctness of Feature Featherweight Java in Coq

Awards

2019 **ACM Graduate Teaching Assistant Award**, Purdue.
I was awarded by the Purdue ACM Chapter as the best Graduate TA in the department for the academic year of 2019, working under the supervision of Jeff Turkstra for the class CS240: Programming in C

Experience

Publications

POPL'23 **A Type-Based Approach to Divide-and-Conquer Recursion in Coq**, *Abreu, Pedro and Delaware, Benjamin and Hubers, Alex and Jenkins, Christa and Morris, J. Garrett and Stump, Aaron*, `https://dl.acm.org/doi/abs/10.1145/3571196`.

Vocational

Winter of 2023 **Researcher**, *Pruvendo*, Remote.
Designed a specification of the communication mechanism between multiple Smart Contracts for the EverScale blockchain platform.

Summer 2020 **Intern**, *coq-of-ocaml*, Nomadic Labs, Paris/Remote.
Translating GADTs from OCaml to Coq, some details on this blog post.

Summer 2019 **Intern**, *Amazon/RTI/ElectionGuard Team*, Galois, Portland.
Specifying and proving safety property of real world software using SAW-Script. And also a little of Coq specification for a voting protocol.

2018/1 **Intern**, *Kami Team*, SiFive, San Mateo.
On proving the correctness of the Floating Point Unit used by the RiscV processor, using Coq.

2015–2017 **Intern**, *Tribunal de Contas da União*, Brasilia.
Development and maintenance of different kinds of tests, such as integration, end to end, component, performance, *etc.*

Summer 2014 **Intern**, *Trustworthy Systems*, NICTA, Sydney.
On the Verification of file systems using Isabelle.

Miscellaneous

2020 – **Type Theory Forall Podcast**, *Host*.
The Type Theory Forall Podcast has the mission to make Type Theory research and related topics more accessible to a wider audience not necessarily from academia.

2019 – 2020 **Coquedille**, *Purdue*.
Translating the Intrinsic Type Theory of Coq to the Extrinsic Type Theory of Cedille `https://github.com/pedrotst/coquedille`

2017/1 **Head of TAs**, *Introduction to Computer Science*, UnB.
In charge for the selection and management of the teaching assitant body for the discipline of Introduction to Computer Science, consisting of 36 tutors.

2016/2 **Java Virtual Machine**, *UnB*.
Lead a team of 5 to develop a fully working JVM for bytecode generated with javac 5, `https://github.com/pedrotst/JVM`

Graduate Teaching Assistant Roles

CS565, *Graduate Programming Languages*, Purdue, '22 Spring, '24 Spring.

CS456, *Undergraduate Programming Languages*, Purdue, '21 Fall.

CS240, *Programming in C*, Purdue, '18 Fall, '19 Spring, '20 Spring.

CS182, *Foundations of Computer Science*, Purdue, '23 Fall.

CS180, *Programming I*, Purdue, '23 Fall.

Scholarships

Sept 2024 **School and Workshop on Proof Theory**, *Funded by Proof Society*, Birminham, UK.

Sept 2024 **SC Proof and Computation**, *Funded by EuroProofNet*, Fishbachau, Germany.

Jan 2017 **PLMW at POPL**, *Funded by ACM*, Los Angeles, USA.

Jul 2017 **OPLSS**, *Funded by Finatec and OPLSS*, Porland, USA.

2014–2015 **Exchange**, *University of Sydney*, Sydney.
Fully funded by CNPq via the Science Without Borders program to study one year at the University of Sydney.

Languages

Portuguese **Mother Tongue**

English **Fluent**

Spanish **Intermediate Understanding, Basic Speech**

French **Basic**

Esperanto **Advanced**

Computer skills

Programming Language: C/C++, Java, Python, Haskell, OCaml, Coq, Isabelle, Cedille

Familiar With: Java Bytecode, Alloy, SAW, Dafny, LLVM

References

- Benjamin Delaware, Purdue – bendy@purdue.edu
- Jeffrey Turkstra, Purdue – jeff@purdue.edu
- Rodrigo Bonifácio, UnB – rbonifacio@cic.unb.br