

César A. Lizárraga

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Relevant Experience

- **CiBO Technologies (St. Louis, MO): July 2017 - Present**
Engagement Engineering Lead (Project Lead / Software Engineer)
 - Led a small team (4-5 engineers) in custom application development for a strategic partnership client that resulted in a multimillion dollar contract
 - Produced sprint planning and project planning documentation while working with business development and leadership
 - Interfaced multiple times per week with various members of the client team to ensure their needs were met
 - Reduced client research time from months to days using a high level business development and product concept to design and architect an industry leading set of tools
 - Developed several services, APIs, and API clients in Scala and Python from prototype to deployment
- **Nanaya (St. Louis, MO): July 2014 - Present**
Co-founder / Infrastructure & Software Engineer / Statistician
 - Supported, managed, and updated infrastructure for application averaging 50 users per day and about 300,000 total
 - Migrated original application infrastructure to a container based model
 - Facilitated communication between developers and R&D Team members
 - Managed team member contributions and source code version control
 - Developed, verified, and tested algorithm(s) for application
- **Donald Danforth Plant Science Center (St. Louis, MO)**
 - **October 2016 - July 2017**
Senior Computational Scientist
 - * Provided computational interface for research groups
 - * Trained lab technicians, research scientists, and graduate students in computational infrastructure use
 - * PheNode: Developed prototype of Arduino & Raspberry Pi controlled field canopy sensor system
 - * <https://www.agrelaeco.com/>
 - * **PhenoPiSight: A Fixed Camera Greenhouse-based Phenotyping platform**
 - **December 2014 - October 2016**
Laboratory Technician (Bioinformatics/Statistics) in Mockler Lab
 - * Developed, documented, maintained, and tested pipelines for analyzing high throughput sequencing and imaging data
 - * Analytics, data management, and development for the **Brachypodium ENCODE Project** and the **EPSCoR Project**
 - * Coordinated with Bioinformatics Core Director for computational resource management
 - * Performed data analysis on a routine basis

Public Projects

PhenoPiSight: Fixed Camera Greenhouse-based Phenotyping Platform

- Used Ansible to automate image capture and transfer of images from 180 Raspberry Pis on a gantry above the greenhouse

- Developed pipeline to take captured images and make dense 3D pointcloud reconstructions (+/- 0.5cm accuracy)
- Trained lab technicians to find phenotypes in 3D reconstructions and compare to ground-based greenhouse measurements
- Example of the 3D reconstruction: <https://traitcapture.org/pointclouds/by-id/586a428ef7f5667846b1f8a0>

Education

B.A. Mathematics, 2008

Probability and Statistics

Department of Mathematics, Washington University in St. Louis

Engineering Skills

- In order of familiarity:
- Languages: *Scala, Python, R, SQL, Bash, Java*
- Frameworks: *Akka, Django*
- Infrastructure & DevOps: *Kubernetes, Argo Workflow Engine, Helm, Ansible, HTCondor*
- Cloud computing: *AWS, DigitalOcean*
- Software: *GNU Emacs, Git, PostgreSQL, IntelliJ IDEA, NGINX, Travis CI, Jenkins, RabbitMQ*

Languages

- Fluent: *English, Spanish*
- Intermediate: *Italian*

Publications

- Erica Agnew, Adam Bray, Eric Floro, Nate Ellis, John Gierer, **César Lizárraga**, Darren O'Brien, Madeline Wiechert, Todd C. Mockler, Nadia Shakoor, Christopher N. Topp. Whole-Plant Manual and Image-Based Phenotyping in Controlled Environments. *Plant Biology* 2(1):1-21. <https://doi.org/10.1002/cppb.20044> (2017)
- He Huang, Malia A. Gehan, Sarah E. Huss, Sophie Alvarez, **Cesar Lizarraga**, Ellen L. Gruebbeling, John Gierer, Michael J. Naldrett, Rebecca K. Bindbeutel, Bradley S. Evans, Todd C. Mockler, Dmitri A. Nusinow. Cross-species complementation reveals conserved functions for EARLY FLOWERING 3 between monocots and dicots. *Plant Direct* 1:4 <https://doi.org/10.1002/pld3.18> (2017)
- Gehan MA, Fahlgren N, Abbasi A, Berry JC, Callen ST, Chavez L, Doust AN, Feldman MJ, Gilbert KB, Hodge JG, Hoyer JS, Lin A, Liu S, **Lizárraga C**, Lorence A, Miller M, Platon E, Tessman M, Sax T. 2017. PlantCV v2: Image analysis software for high-throughput plant phenotyping. *PeerJ* 5:e4088 <https://doi.org/10.7717/peerj.4088>
- Laura Rayhel, B.A., Copper Aitken-Palmer, D.V.M., Ph.D., Priscilla Joyner, B.Sc., B.V.M.S., Carolyn Cray, Ph.D., **César Andrés Lizárraga, B.A.**, Betty Ackerman, M.T. (A.S.C.P.), and Chris Crowe, B.S. Hematology and biochemistry in captive white-naped cranes (*Grus VIPIO*). *Journal of Zoo and Wildlife Medicine* 46(4):747-754. <http://dx.doi.org/10.1638/2015-0027.1> (2015)

Professional Presentations (Posters)

- Skyler Mitchell, Stuart Marshall, Stephanie Turnipseed, Luke Burnham, **César Lizárraga**, Jared Streich, Rob Alba, and Todd C. Mockler (2015) "Effect of drought treatments on transpiration rate and

stomatal density in *Brachypodium distachyon*.” Donald Danforth Plant Science Center and Missouri Botanical Gardens Joint Fall Symposium, St. Louis, MO, October 2015

- **César A. Lizárraga**, Henry D. Priest, Noah Fahlgren, Rob Alba, and Todd C. Mockler. Bioinformatics Pipelines for Purple False Brome (*Brachypodium distachyon*) Donald Danforth Plant Science Center, St. Louis, MO. (2015)
- **Cesar Lizarraga**, Stuart Marshall, Bradley Flynn, Nadia Shakoor and Todd C. Mockler. PhenoPiSight: Fixed Camera Greenhouse-based Phenotyping Platform. (2016)