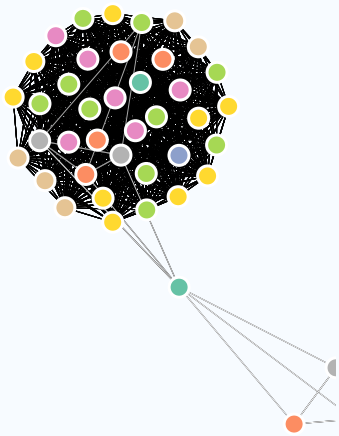
AARON COYNER, PHD(C)

PhD Candidate, Division of Bioinformatics and Computational Biomedicine, Department of Medical Informatics and Clinical Epidemiology

Researcher, Casey Eye Institute

Oregon Health & Science University

My research is centered around the detection and prediction of retinopathy of prematurity using a deep learning approach.



View this CV online with links at *aaroncoyner.github.io/cv*

EDUCATION

Current | 2016

PhD, Bioinformatics and Computational Biomedicine
Oregon Health & Science University — Portland, OR

- Dissertation: Machine Learning for Disease Detection and Prediction in Retinopathy of Prematurity

2014 | 2012

BS, Chemistry
Pacific Lutheran University — Tacoma, WA

- Thesis: Characterization of a Novel Long-chain Polymer Electrolyte

2012 | 2010

AS, Biology/Chemistry
Pierce Community College — Lakewood, WA

PATENTS

Current | 2018

Systems, Devices, and Methods for Identifying Plus Disease Using Deep Convolutional Neural Networks
Oregon Health & Science University — Portland, OR

- Chiang MF, Campbell JP, Ostmo S, Chan RVP, Kalpathy-Cramer J, Brown JM, Erdogmus D, Ioannidis S, **Coyner AS**

PEER-REVIEWED PUBLICATIONS

2020

Aggressive Posterior Retinopathy of Prematurity: Clinical and Quantitative Imaging Features in a Large North American Cohort
Ophthalmology

- Bellsmith KN, Brown J, Kim SJ, Goldstein IH, **Coyner AS**, Ostmo S, Gupta K, Chan RVP, Kalpathy-Cramer J, Chiang MF, Campbell JP

2020

Introduction to Machine Learning, Neural Networks, and Deep Learning[1]
Translational Vision Science and Technology

- **Choi RY*, Coyner AS***, Kalpathy-Cramer J, Chiang MF, Campbell JP

CONTACT

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coyner@ohsu.edu
linkedin
github.com/aaroncoyner
aaron_coyner

LANGUAGE SKILLS

- R
- Python
- Bash
- SQL
- JavaScript

Last updated on 2020-07-24.

2019

Automated Fundus Image Quality Assessmentin Retinopathy of Prematurity Using Deep Convolutional Neural Networks[2]

Ophthalmology Retina

- **Coyner AS**, Swan R, Campbell JP, Ostmo S, Brown JM, Kalpathy-Cramer J, Kim SJ, Jonas KE, Chan RVP, Chiang MF
- MOST DOWNLOADED PEDIATRIC OPHTHALMOLOGY ARTICLE OF 2020

2019

Demystifying the Jargon: The Bridge between Ophthalmology and Artificial Intelligence[3]

Ophthalmology Retina

- **Coyner AS**, Campbell JP, Chiang MF

2018

Deep Learning for Image Quality Assessment of Fundus Images in Retinopathy of Prematurity[4]

AMIA Annual Symposium Proceedings

- **Coyner AS**, Swan R, Brown JM, Kalpathy-Cramer J, Kim SJ, Campbell JP, Jonas KE, Ostmo S, Chan RVP, Chiang MF

2018

Scleral Pits in Choroideremia: Implications for Retinal Gene Therapy[5]

Retina

- Al-Qahtani AA, Ba-Ali S, Alabduljalil T, **Coyner AS**, Patel RC, Weleber RG, Girach A, Christensen SK, Larsen M, Pennesi ME, Yang P

2018

The Role of ERK1/2 Activation in Sarpogrelate-Mediated Neuroprotection[6]

Investigative Ophthalmology & Visual Science

- Ku CA, Ryals RC, Jiang D, **Coyner AS**, Weller KK, Sinha W, Robb BM, Yang P, Pennesi ME

2017

Long-term Characterization of Retinal Degeneration in Royal College of Surgeons Rats Using Spectral-Domain Optical Coherence Tomography[7]

Investigative Ophthalmology & Visual Science

- Ryals RC, Andrews MD, Datta S, **Coyner AS**, Fischer CM, Wen Y, Pennesi ME, McGill TJ

2016

Retinal Neuroprotective Effects of Flibanserin, an FDA-Approved Dual Serotonin Receptor Agonist-Antagonist[8]

PLoS One

- **Coyner AS**, Ryals RC, Ku CA, Fischer CM, Patel RC, Datta S, Yang P, Wen Y, Hen R, Pennesi ME

2015

Sarpogrelate, a 5-HT2A Receptor Antagonist, Protects the Retina From Light-Induced Retinopathy[9]

Investigative Ophthalmology & Visual Science

- Tullis BE, Ryals RC, **Coyner AS**, Gale MJ, Nicholson A, Ku CA, Regis D, Sinha W, Datta S, Wen Y, Yang P, Pennesi ME

CONFERENCE PRESENTATIONS

2018 — **Deep Learning for Image Quality Assessment of Fundus Images in Retinopathy of Prematurity**
American Medical Informatics Association — San Francisco, CA
- **Coyner AS**, Swan R, Brown JM, Kalpathy-Cramer J, Kim SJ, Campbell JP, Jonas KE, Ostmo S, Chan RVP, Chiang MF

2018 — **Deep Learning for Image Quality Assessment of Fundus Images in Retinopathy of Prematurity**
Association for Research in Vision and Ophthalmology — Honolulu, HI
- **Coyner AS**, Swan R, Brown JM, Kalpathy-Cramer J, Kim SJ, Campbell JP, Jonas KE, Ostmo S, Chan RVP, Chiang MF

2017 — **Automated Image Quality Assessment for Fundus Images in Retinopathy of Prematurity**
American Medical Informatics Association — Washington, DC
- **Coyner AS**, Swan R, Brown JM, Kalpathy-Cramer J, Kim SJ, Campbell JP, Jonas KE, Ostmo S, Chan RVP, Chiang MF

2017 — **Automated Image Quality Assessment for Fundus Images in Retinopathy of Prematurity**
Association for Research in Vision and Ophthalmology — Baltimore, MD
- **Coyner AS**, Swan R, Brown JM, Kalpathy-Cramer J, Kim SJ, Campbell JP, Jonas KE, Ostmo S, Chan RVP, Chiang MF

2016 — **Flibanserin, a FDA approved dual serotonin receptor agonist-antagonist, provides retinal neuroprotection from light induced damage**
Association for Research in Vision and Ophthalmology — Denver, CO
- **Coyner AS**, Ryals RC, Ku CA, Datta S, Pennesi ME

CODE REPOSITORIES

Current | 2020 — **ready-for-r-labs**[10]
Oregon Health & Science University — Portland, OR
- Notebooks for Ready4R
- Collaboration with Ted Laderas[11]

Current | 2019 — **irop-iqa**[12]
Oregon Health & Science University — Portland, OR
- Automated fundus image quality assessment tool for use in retinopathy of prematurity
- Maintainer

Current | 2019

ml-interpretability[13]

Oregon Health & Science University — Portland, OR

- Black box interpretability in R for Data Analytics
- Maintainer

Current | 2019

dissertate-ohsu[14]

Oregon Health & Science University — Portland, OR

- Materials for writing a dissertation at Oregon Health & Science University in R Markdown
- Forked from Tyson Barrett[15]

2018

machine-learning[16]

- Personal code repository for machine learning methods implemented in Python.
- Maintainer

2018 | 2017

sleep-data-aligner[17]

Oregon Health & Science University — Portland, OR

- File-combining software for Harvard sleep-quality research group.
- Course collaboration with Connor Smith[18] and Sean Babcock[19]

TEACHING AND WORK EXPERIENCE

Current | 2018

Teaching Assistant

Oregon Health & Science University — Portland, OR

- BMI 669: Data Analytics
- BMI 507: Ready4R
- CS 659: Machine Learning
- MATH 630: Probability & Statistical Inference for Scientists and Engineers
- BSTA 525: Introduction to Biostatistics

Current | 2016

NLM Predoctoral Fellow, Division of Bioinformatics and Computational Biomedicine

Oregon Health & Science University — Portland, OR

- Chiang Lab

2019

Mentored Teaching

Oregon Health & Science University — Portland, OR

- BMI 665: Bioinformatics Programming and Scripting
- BMI 669: Data Analytics

2016 | 2014

Research Assistant II

Oregon Health & Science University — Portland, OR

- Penessi Lab

2012 | 2011

Research Assistant I
Pacific Lutheran University
Tacoma, WA
• Waldow Lab

RELEVANT COURSEWORK

2018 **BMI 602: Fundamentals of Digital Image and Video Processing**[20]
Oregon Health & Science University
Portland, OR

2018 **BMI 602: Neural Networks for Machine Learning**[21]
Oregon Health & Science University
Portland, OR

2018 **BMI 635: Management and Processing of Large-Scale Data**[22]
Oregon Health & Science University
Portland, OR

2018 **BMI 667: Network Science and Biology**[23]
Oregon Health & Science University
Portland, OR

2017 **BMI 651: Statistical Methods**[24]
Oregon Health & Science University
Portland, OR

2017 **BMI 669: Data Analytics**[25]
Biomedical Informatics, Oregon Health & Science University
Portland, OR

2017 **CS 659: Machine Learning**[26]
Biomedical Informatics, Oregon Health & Science University
Portland, OR

2017 **MATH 630: Probability and Statistical Inference for Scientists and Engineers**[27]
Biomedical Informatics, Oregon Health & Science University
Portland, OR

2016 **BMI 650: Algorithms**[28]
Oregon Health & Science University
Portland, OR

VOLUNTEER EXPERIENCE

2017 | 2014 **Casey Outreach Van**
Ophthalmic Assistant
Portland, OR

2013 **VIDA Volunteer Services**
Dental Assistant
Costa Rica; Nicaragua

2012 | 2011 **Guide Dogs for the Blind**
Puppy Raiser
Tacoma, WA

LINKS

1: https://tvst.arvojournals.org/article.aspx?articleid=2762344
2: https://pubmed.ncbi.nlm.nih.gov/31044738/

3. https://pubmed.ncbi.nlm.nih.gov/31014678/
4. https://pubmed.ncbi.nlm.nih.gov/30815164/
5. https://pubmed.ncbi.nlm.nih.gov/29160785/
6. https://pubmed.ncbi.nlm.nih.gov/29368005/
7. https://pubmed.ncbi.nlm.nih.gov/28253400/
8. https://pubmed.ncbi.nlm.nih.gov/27447833/
9. https://pubmed.ncbi.nlm.nih.gov/26200496/
10. https://github.com/laderast/ready_for_r_labs
11. http://laderast.github.io/
12. https://github.com/aaroncoyner/irop-iqa
13. https://github.com/aaroncoyner/ml-interpretability
14. https://github.com/aaroncoyner/dissertate-ohsu
15. https://tysonbarrett.com/
16. https://github.com/aaroncoyner/machine-learning
17. https://github.com/aaroncoyner/sleep-data-aligner
18. https://github.com/ConnorJPSmith
19. https://github.com/sbabcock21
20. https://www.coursera.org/learn/digital
21. https://www.coursera.org/learn/neural-networks-deep-learning
22. https://ohsu.campusconcourse.com/view_syllabus?course_id=15211&public_mode=1
23. https://ohsu.campusconcourse.com/view_syllabus?course_id=15217&public_mode=1
24. https://ohsu.campusconcourse.com/view_syllabus?course_id=7969
25. https://ohsu.campusconcourse.com/view_syllabus?course_id=18686
26. https://www.ohsu.edu/school-of-medicine/csee/machine-learning
27. https://www.ohsu.edu/school-of-medicine/csee/data-science
28. https://ohsu.campusconcourse.com/view_syllabus?course_id=13458&public_mode=1