The Affective Growth of Computer Vision

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Discussion & Conclusion

- ❏ Growth of computer vision has had a large emotional impact: **joy** and **excitement**, but also **isolation**, **anger**, **cynicism**, **sadness**.
- ❏ Hyperfocus on benchmarks may be detrimental; opportunity to accept and expand qualitative metrics
- ❏ Need an environment inclusive of those who feel marginalized/differently, who don't fit prevailing standards of CV

Introduction

- ❏ Computer vision (CV) has experienced unprecedented growth and critique as a discipline.
- ❏ How has the growth of CV affected individuals in the community emotionally?
- ❏ Emotions orient how one behaves and drive the trajectory of the community.
- ❏ We seek to amplify these diverse emotions to imagine a more inclusive, vibrant CV community.

Methodology

- ❏ Qualitative approach to identify how CV's growth has emotionally impacted its community
- ❏ 56 computer vision academics (~66%) and professionals (~38%) responded to the prompt: *Write a nonfiction story about computer vision with yourself as the main character. The story should involve recent changes in the profession/discipline and depict an event of emotional impact.*
- ❏ We replicate asynchronous qualitative methods: Informants wrote stories in Google Docs, researchers asked questions via comments, and informants iteratively revised their drafts.
- ❏ Demographics reflect biases in the CV community: 73% men, 23% women, 3.6% non-binary 45% Asian, 38% white

Findings

"Thirty minutes later, we had results that outperformed the prior model by 10-20%. I remember bouncing back into my advisor's office with a silly grin… It was an eye-opening moment."

Deep Learning (DL) is almost Magical

- ❏ Rejuvenated a "**tough** and **hopeless** time…before 2012" when there was only incremental progress
- ❏ **Excitement** that DL is a shockingly good and easy "hammer" to previous problems

With Growth, More Opportunities

- ❏ **Pride** that CV is now well-known to general public
- ❏ **Surprising** switch in power dynamics – companies vying for student interns
- ❏ Well-funded conferences: "*flowing wine, well appointed buffet, and irresistible pastries*"

"I am a person. I am also a researcher. I am not a Deep Learning researcher…That's enough for now."

Shift to DL: "Neural Network Technicians"

- ❏ **Frustration** over loss of "*fundamental questions*" about perception, cognition, vision, and learning
- ❏ **Hyperfocus** on benchmarks and "*engineering the black box.*" "*How much [computational] power is wasted just to get that less than 1%…improvement?*"
- ❏ Selective amnesia: "*There was one [poster] I was keen to visit…This is work I've done myself 5 years ago…I thought 5 years ago isn't that long for our work to be forgotten. The presenter [said]…'I don't read any paper before 2015'… I felt **deflated**.*"

Industry & Deep Learning Hype

- ❏ Allure of funding: "*Everyone in the lab is assigned to work at a company for funding. And these companies make us [PhD students] work *hard*. Weekly deadlines…are the norm. This would be fine if what we were doing was research, but it is not…I learned that most students **hated** their company research.*"

Paranoia over Harmful Blackboxes

- ❏ No longer can be a "**simple happy** nerd…**an ostrich researcher** hiding my head in the sand and blame others for the misuse of technology."
- ❏ Growing uncertainty of ramification of blackboxes: "*Trying to build in explainability and transparency… feels inherently **futile**…I hope people using this system understand it's not some magic box.*"
- ❏ Tired of harmful papers: I felt "*pure **rage**…then just deep **sadness**…it piles up on a stack of research…that I consider wrong…and made me **lose any excitement** for the field.*"

Isolation

- ❏ **Despair** with networking: "*The sheer volume of papers… means that few people…look at all the papers in their area… Workshops have talks, but… call upon the same set of senior researchers again and again.*"
- ❏ Marginalizing ethics: "*[My friend] asked me, 'Why are you wasting your time with these workshops [Women in Machine Learning and Queer in AI] instead of going to the core conferences talks?'…his question **hurt**.*"
- ❏ Ostracizing educators: "*I experienced **heartbreak**…I tried to talk to presenters…But it was clear…that I did not have any insights to offer in return…they moved on and talked to others…I felt the vision community had no place for non-publishing undergraduate educators, even those who were preparing their future graduate students…I haven't returned to CVPR since then.*"