CHENYUN WU

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A PhD Candidate Looking for Full-time Research Positions on Computer Vision

EDUCATION

PhD candidate in **Computer Science, UMass Amherst** GPA: 4.0/4.0 09/2015 – 05/2021
- Advised by Prof. Subhransu Maji. Received Computer Science M.S. degree in 05/2018.
- Interested in vision and language, video understanding, object detection / segmentation, fine-grained recognition, etc.

B.S. in Physics, Peking University GPA: 3.7/4.0 09/2011 – 07/2015

B.S. in Computer Software, Peking University GPA: 3.7/4.0 09/2012 – 07/2015

Summer undergraduate research in **CS department, Carnegie Mellon University** 06/2014 – 09/2014

WORKING EXPERIENCES

Research intern at **ByteDance** AI Lab in US 06/2020 – present

Working on video and language.

Research intern at **Adobe** Creative Intelligence Lab 05/2018 – 03/2019

Worked on large-scale visual grounding.

Software engineering intern at **Google** Research & Machine Perception Team 06/2017 – 09/2017

Worked on deep image compression using U-Net with TensorFlow.

RESEARCH EXPERIENCES

Describing Textures using Natural Language [ECCV 2020 Oral] **04/2019 – 03/2020**
- Collected a dataset of natural language descriptions on texture images, capturing fine-grained texture characteristics.
- Conducted detailed analysis of classification, metric learning and captioning models, with an emphasis on compositionality.
- Explored applications on fine-grained classification and model interpretation.

PhraseCut: Language-based Image Segmentation in the Wild [CVPR 2020] **05/2018 – 11/2019**
- Collected a large-scale visual grounding dataset of templated phrases and corresponding image segmentation pairs with massive things and stuff categories and explicit attributes and relationship descriptions.
- Developed a model that provides unified treatment of both things and stuff and handles long-tail distribution of concepts.

Reasoning about Fine-grained Attribute Phrases using Reference Games [ICCV 2017] **10/2016 – 07/2017**
- Introduced a data collection framework of describing fine-grained visual differences with free-form attribute phrases.
- Trained a speaker (a captioning model) to describe an image out of a pair, and a listener (a joint embedding model for images and phrases) to guess which image is referred to; Evaluated with human study.
- Applied the models to fine-grained classification, set-wise descriptions, and image retrieval with natural language.

Learning to Act for Vision based Geo-localization [Master Thesis] **09/2017 – 05/2018**
- Collected both real-world and synthetic data of images and their locations: adopted SLAM method to improve ground-truth GPS accuracy for camera data; collected Minecraft data in various scenery, weather and daylight.
- Implemented a particle filter on top of a neural net to predict locations from a sequence of observations when the agent moves around; Applied reinforcement learning to plan agent actions to localize itself more efficiently.

Fine-grained Right Whale Recognition with Region Alignment [Top 10% in Kaggle] **09/2015 – 12/2015**
- Trained an identifier to distinguish 447 right whales with long tail distribution (fewer than 5000 labeled images in total).
- Designed and trained an auto-encoder to detect and align the whale's head, followed by a classifier to identify whales.

PUBLICATIONS

- *Describing Textures using Natural Language.* **Chenyun Wu**, Mikayla Timm, Subhransu Maji. Proceedings of the European Conference on Computer Vision (ECCV), 2020. Oral.
- *PhraseCut: Language-based Image Segmentation in the Wild.* **Chenyun Wu**, Zhe Lin, Scott Cohen, Trung Bui, Subhransu Maji. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2020.
- *Reasoning about Fine-grained Attribute Phrases using Reference Games.* Jong-Chyi Su*, **Chenyun Wu*,** Huaizu Jiang, Subhransu Maji. International Conference on Computer Vision (ICCV), 2017.
- Two physics papers in 2014: third author in Applied Physics Letters; fifth author in Journal of Optics.

COURSEWORK

- **Graduate** (All earned grade A): Computer Vision, Reinforcement Learning, Machine Learning, Artificial Intelligence, Probabilistic Graphical Models, Algorithm, Neural Networks (seminar), Deep Learning (seminar), Software Engineering.
- **Undergrad**: Database Systems (91), Artificial Intelligence (85), Natural Language Processing (88), Human-Computer Interaction (84), Numerical Methods (86), Compiler Design (92), Operating Systems (92), Functional Programming, etc.

SKILLS

- Experienced in Python (PyTorch, TensorFlow); Familiar with Java, Matlab, C++, Linux clusters, web development.