

Brian Price

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Curriculum Vitae

Education

Brigham Young University, Provo, Utah.

2010 **PhD**, *Computer Science*.

- Dissertation Topic: Interactive Video and Image Segmentation and Matting
- GPA 4.0
- Advisor: Professor Bryan S. Morse

2006 **M.S.**, *Computer Science*.

- Thesis Topic: Image Vectorization
- GPA 4.0
- Advisor: Professor William A. Barrett

2003 **B.S.**, *Computer Science*.

- Graduated *Magna cum Laude*, GPA 4.0 in major, 3.99 overall
- Minor in Mathematics
- National Merit Scholarship Recipient

Work Experience

2010-present **Principal Scientist**, *Adobe Research*.

- Developed new technologies and integrated them into product features, including:
 - Liquid Mode in Acrobat
 - Select Subject in Lightroom
 - Select Subject 2020 update in Photoshop
 - Object Selection tool in Photoshop
 - Select and Mask feature in Photoshop
 - Refine Edge tool in AfterEffects
 - Key Cleaner tool in AfterEffects
 - Refine Selection tool in Photoshop Elements
 - Smart Selection tool in Photoshop Mix
 - Auto Select function in Photoshop Mix
 - Smart Crop feature in Photoshop Elements and Photoshop Mix
 - Collage feature in Photoshop Express
- Mentored 60+ interns (graduate students) for 3 months each in research projects aimed toward publication in top academic conferences.
- Participated in 50+ collaborations with professors and graduate students at multiple universities.
- Published 70+ academic papers during this time, the majority in Tier 1 venues.
- Inventor on 100+ patents with 50+ patents pending (both domestic and international).

2002-2010 **Research Assistant**, *Brigham Young University*.

- Research topics and previous projects include video and image segmentation, image matting, interactive image editing, image vectorization, medical imaging and segmentation.

- 2007 **Instructor**, *Brigham Young University*.
◦ Taught *CS 312: Algorithm Analysis*, Spring term.
- 2003-2006 **Teaching Assistant**, *Brigham Young University*.
◦ Assisted teaching *CS 450: Digital Signal and Image Analysis*, *CS 650: Computer Vision*, and *CS 750: Advanced Computer Vision*.

Publications

- 2023 Tai-Yu Pan, Qing Liu, Wei-Lun Chao, Brian Price. *Towards Open-World Segmentation of Parts*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2023.
- Hoang M. Le, Brian Price, Scott Cohen, Michael S. Brown. *GamutMLP: A Lightweight MLP for Color Loss Recovery*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2023.
- Yizhi Song, Zhifei Zhang, Zhe Lin, Scott Cohen, Brian Price, Jianming Zhang, Soo Ye Kim, Daniel Aliaga. *ObjectStitch: Object Compositing With Diffusion Model*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2023.
- 2022 Hongje Seong, Seoung Wug Oh, Brian Price, Euntai Kim, Joon-Young Lee. *One-Trimap Video Matting*. Proceedings of the European Conference on Computer Vision (ECCV) 2022.
- Brian Davis, Bryan Morse, Chris Tensmeyer, Brian Price, Curtis Wigington, Vlad Morariu. *End-to-end Document Recognition and Understanding with Dessurt*. Proceedings of TiE: Text in Everything (ECCV 2022 Workshop) 2022.
- Yutong Dai, Brian Price, He Zhang, Chunhua Shen. *Boosting Robustness of Image Matting With Context Assembling and Strong Data Augmentation*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2022.
- Fanqing Lin, Brian Price, Tony Martinez. *Generalizing Interactive Backpropagating Refinement for Dense Prediction Networks*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2022.
- 2021 Brian Davis, Bryan Morse, Brian Price, Chris Tensmeyer, Curtis Wigington. *Visual FUDGE: Form Understanding via Dynamic Graph Editing*. Proceedings of the International Conference on Document Analysis and Recognition (ICDAR) 2021.
- Xingqian Xu, Zhifei Zhang, Zhaowen Wang, Brian Price, Zhonghao Wang, Humphrey Shi. *Rethinking Text Segmentation: A Novel Dataset and a Text-Specific Refinement Approach*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2021.
- Samuel Grieggs, Bingyu Shen, Greta Rauch, Pei Li, Jiaqi Ma, David Chiang, Brian Price, Walter Scheirer. *Measuring Human Perception to Improve Handwritten Document Transcription*. IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI) 2021.
- Jun Hao Liew, Scott Cohen, Brian Price, Long Mai, Jiashi Feng. *Deep Interactive Thin Object Selection*. Proceedings of the Winter Conference on Applications of Computer Vision (WACV) 2021.

- 2020 Brian Davis, Chris Tensmeyer, Brian Price, Curtis Wigington, Bryan Morse, Rajiv Jain. *Text and Style Conditioned GAN for Generation of Offline Handwriting Lines*. Proceedings of the British Machine Vision Conference (BMVC) 2020.
- Henghui Ding, Scott Cohen, Brian Price, and Xudong Jiang. *PhraseClick: Toward Achieving Flexible Interactive Segmentation by Phrase and Click*. Proceedings of the European Conference on Computer Vision (ECCV) 2020.
- Marco Forte, Brian Price, Scott Cohen, Ning Xu, Francois Pitie. *Interactive Training and Architecture for Deep Object Selection*. Proceedings of the IEEE International Conference on Multimedia and Expo (ICME) 2020.
- Peng Zhou, Brian Price, Scott Cohen, Gregg Wilensky, Larry S. Davis. *Deepstrip: High-Resolution Boundary Refinement*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2020.
- Naoto Inoue, Daichi Ito, Yannick Hold-Geoffroy, Long Mai, Brian Price, and Toshihiko Yamasaki. *RGB2AO: Ambient Occlusion Generation from RGB Images*. Proceedings of Eurographics 2020.
- Kushal Kafle, Robik Shrestha, Brian Price, Scott Cohen, Chris Kanan. *Answering Questions About Data Visualizations using Efficient Bimodal Fusion*. Proceedings of the Winter Conference on Applications of Computer Vision (WACV) 2020.
- 2019 Jun Hao Liew, Scott Cohen, Brian Price, Long Mai, Sim-Heng Ong, Jiashi Feng. *MultiSeg: Semantically Meaningful, Scale-Diverse Segmentations from Minimal User Input*. Proceedings of the IEEE International Conference on Computer Vision (ICCV) 2019.
- Yinan Zhao, Brian Price, Scott Cohen, Danna Gurari. *Unconstrained Foreground Object Search*. Proceedings of the IEEE International Conference on Computer Vision (ICCV) 2019.
- Naoto Inoue, Daichi Ito, Ning Xu, Jimei Yang, Brian Price, Toshihiko Yamasaki. *Learning to Trace: Expressive Line Drawing Generation from Photographs*. Proceedings of Pacific Graphics 2019.
- Christopher Tensmeyer, Vlad Morariu, Brian Price, Scott Cohen, Tony Martinez. *Deep Splitting and Merging for Table Structure Decomposition*. Proceedings of the International Conference on Document Analysis and Recognition (ICDAR) 2019.
- Brian Davis, Bryan Morse, Scott Cohen, Brian Price, Chris Tensmeyer. *Deep Visual Template-Free Form Parsing*. Proceedings of the International Conference on Document Analysis and Recognition (ICDAR) 2019.
- Curtis Wigington, Brian Price, Scott Cohen. *Multi-label Connectionist Temporal Classification*. Proceedings of the International Conference on Document Analysis and Recognition (ICDAR) 2019.
- Mahmoud Afifi, Brian Price, Scott Cohen, Michael Brown. *When Color Constancy Goes Wrong: Correcting Improperly White-Balanced Images*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2019.
- Mahmoud Afifi, Brian Price, Scott Cohen, Michael Brown. *Image Recoloring Based on Object Color Distributions*. Eurographics 2019 (short paper) 2019.

- Yinan Zhoa, Brian Price, Scott Cohen, Danna Gurari. *Guided Image Inpainting: Replacing an Image Region by Pulling Content from Another Image*. Proceedings of the Winter Conference on Applications of Computer Vision (WACV) 2019.
- 2018 Hoang Le, Long Mai, Brian Price, Scott Cohen, Hailin Jin, Feng Liu. *Interactive Boundary Prediction for Object Selection*. Proceedings of the European Conference on Computer Vision (ECCV) 2018.
- Ning Xu, Linjie Yang, Yuchen Fan, Jianchao Yang, Dingcheng Yue, Yuchen Liang, Brian Price, Scott Cohen, Thomas Huang. *YouTube-VOS: Sequence-to-Sequence Video Object Segmentation*. Proceedings of the European Conference on Computer Vision (ECCV) 2018.
- Curtis Wigington, Chris Tensmeyer, Brian Davis, Bill Barrett, Brian Price, Scott Cohen. *Start, Follow, Read: End-to-End Full-Page Handwriting Recognition*. Proceedings of the European Conference on Computer Vision (ECCV) 2018.
- Hengshuang Zhao, Xiaohui Shen, Zhe Lin, Kalyan Sunkavalli, Brian Price, Jia Jiaya. *Compositing-aware Image Search*. Proceedings of the European Conference on Computer Vision (ECCV) 2018.
- Andrew Gilbert, John Collomosse, Hailin Jin, Brian Price. *Disentangling Structure and Aesthetics for Content-aware Image Completion*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2018.
- Ruotian Luo, Brian Price, Scott Cohen, Greg Shakhnarovich. *Discriminability objective for training descriptive captions*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2018.
- Kushal Kafle, Scott Cohen, Brian Price, Christopher Kanan. *DVQA: Understanding Data Visualization via Question Answering*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2018.
- 2017 Curtis Wigington, Seth Stewart, Bill Barrett, Brian Davis, Brian Price and Scott Cohen. *Data Augmentation for Recognition of Handwritten Words and Lines using a CNN-LSTM Network*. Proceedings of the International Conference on Document Analysis and Recognition (ICDAR) 2017.
- Dafang He, Brian Price, Scott Cohen, Daniel Kifer and Lee Giles. *Deep Multi-scale Multi-task FCN for Semantic Page Segmentation and Table Structure Detection*. Proceedings of the International Conference on Document Analysis and Recognition (ICDAR) 2017.
- Rang Nguyen, Brian Price, Scott Cohen, Michael Brown. *Group-Theme Recoloring for Multi-Image Color Consistency*. Pacific Graphics 2017.
- Ning Xu, Brian Price, Scott Cohen, Jimei Yang, Thomas Huang. *Deep GrabCut for Object Selection*. Proceedings of the British Machine Vision Conference (BMVC) 2017.
- Ning Xu, Brian Price, Scott Cohen, Thomas Huang. *Deep Image Matting*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2017 (oral).

- Yu-Wei Chao, Jimei Yang, Brian Price, Scott Cohen, Jia Deng. *Forecasting Human Dynamics from Static Images*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2017.
- Huixuan Tang, Scott Cohen, Brian Price, Stephen Schiller, Kyros Kutulakos. *Depth From Defocus in the Wild*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2017.
- Sixing Hu, Pierre-Yves Laffont, Brian Price, Scott Cohen, Michael Brown. *Expanding Color Query Results via Image Recoloring*. Eurographics (short paper) 2017.
- Jianming Zhang, Shugao Ma, Mehrnoosh Sameki, Stan Sclaroff, Margrit Betke, Zhe Lin, Xiaohui Shen, Brian Price, Radomír Měch. *Salient Object Subitizing*. International Journal of Computer Vision (IJCV) 2017.
- Mohamed Elhoseiny, Scott Cohen, Walter Chang, Brian Price and Ahmed Elgammal. *Sherlock: Scalable Fact Learning in Images*. Proceedings of the Thirty-First AAAI Conference on Artificial Intelligence (AAAI) 2017.
- 2016 Peng Wang, Bryan Russell, Xiaohui Shen, Scott Cohen, Brian Price, Alan Yuille. *SURGE: Surface Regularized Geometry Estimation from a Single Image*. Accepted to the Conference on Neural Information Processing Systems (NIPS) 2016.
- Mohamed Elhoseiny, Scott Cohen, Walter Chang, Brian Price, Ahmed Elgammal. *Automatic Annotation of Structured Facts in Images*. Workshop on Vision and Language (VL) 2016.
- Jiong Yang, Junsong Yuan, Xiaohui Shen, Zhe Lin, Brian Price, Jon Brandt. *Discovering Primary Objects in Videos by Saliency Fusion and Iterative Appearance Estimation*. IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), June 2016.
- Dongliang Cheng, Abdelrahman Kamel, Brian Price, Scott Cohen, Michael Brown. *Two Illuminant Estimation and User Correction Preference*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2016.
- Jianming Zhang, Stan Sclaroff, Zhe Lin, Xiaohui Shen, Brian Price, Radomir Mech. *Unconstrained Salient Object Detection via Proposal Subset Optimization*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2016.
- Ning Xu, Brian Price, Scott Cohen, Jimei Yang, Thomas Huang. *Deep Interactive Object Selection*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2016.
- Jie Feng, Brian Price, Scott Cohen, Shih-Fu Chang. *Interactive Segmentation on RGBD Images via Cue Selection*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2016.
- Jimei Yang, Brian Price, Scott Cohen, Ming-Hsuan Yang. *Object Contour Detection with a Fully Convolutional Encoder-Decoder Network*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2016.
- Xiaoyong Shen, Ian Sachs, Sylvain Paris, Aaron Hertzmann, Eli Shechtman, Brian Price, Jiaya Jia. *Automatic Portrait Segmentation*. Proceedings of Eurographics 2016.

- Jiong Yang, Brian Price, Xiaohui Shen, Zhe Lin, Junsong Yuan. *Fast Appearance Modeling for Automatic Primary Video Object Segmentation*. Transactions on Image Processing (TIP) 2016.
- 2015 Dongliang Cheng, Brian Price, Scott Cohen, Michael Brown. *Beyond White: Ground Truth Colors for Color Constancy Correction*. Proceedings of the IEEE International Conference on Computer Vision (ICCV) 2015.
- Peng Weng, Xiaohui Shen, Zhe Lin, Scott Cohen, Brian Price, Alan Yuille. *Joint Object and Part Segmentation using Deep Learned Potentials*. Proceedings of the IEEE International Conference on Computer Vision (ICCV) 2015.
- Jianming Zhang, Stan Sclaroff, Zhe Lin, Xiaohui Shen, Brian Price, Radomir Mech. *Minimum Barrier Salient Object Detection at 80 FPS*. Proceedings of the IEEE International Conference on Computer Vision (ICCV) 2015.
- Shuang Li, Huchuan Lu, Zhe Lin, Xiaohui Shen, Brian Price. *Adaptive Metric Learning for Saliency Detection*. Transactions on Image Processing (TIP), Nov 2015.
- Hongyang Li, Huchuan Lu, Zhe Lin, Xiaohui Shen, Brian Price. *Inner and Inter Label Propagation: Salient Object Detection in the Wild*. Transactions on Image Processing (TIP), Oct 2015.
- Dongliang Cheng, Brian Price, Scott Cohen, Michael Brown. *Efficient Learning-based Illuminant Estimation Using Simple Features*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2015.
- Jimei Yang, Brian Price, Scott Cohen, Zhe Lin, Ming-Hsuan Yang. *PatchCut: Data-Driven Object Segmentation via Local Shape Transfer*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2015.
- Peng Wang, Xiaohui Shen, Zhe Lin, Scott Cohen, Brian Price, Alan Yuille. *Towards Unified Depth and Semantic Prediction from a Single Image*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2015.
- Jianming Zhang, Shugao Ma, Mehrnoosh Sameki, Stan Sclaroff, Margrit Betke, Zhe Lin, Xiaohui Shen, Brian Price, Radomír Měch. *Salient Object Subitizing*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2015.
- 2014 Jimei Yang, Brian Price, Scott Cohen, Ming-Hsuan Yang. *Context Driven Scene Parsing with Attention to Rare Classes*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2014 (oral).
- Ejaz Ahmed, Scott Cohen, Brian Price. *Semantic Object Selection*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2014.
- Ehsan Shahrinan, Brian Price, Scott Cohen, Deepu Rajan. *Temporally Consistent and Spatially Accurate Video Matting*. Proceedings of Eurographics 2014.
- Joel Howard, Bryan Morse, Scott Cohen, Brian Price. *Depth-based Patch Scaling for Content-Aware Stereo Image Completion*. Proceedings of the Winter Conference on Applications of Computer Vision (WACV) 2014.

- 2013 Chenxi Zhang, Brian Price, Scott Cohen, Ruigang Yang. *High-Quality Stereo Video Matching via User Interaction and Space-Time Propagation*. Proceedings of the International Conference on 3D Vision (3DV), 2013.
- Gowri Somanath, Scott Cohen, Brian Price Chandra Kambhamettu. *Stereo+Kinect for High Resolution Stereo Correspondences*. Proceedings of the International Conference on 3D Vision (3DV), 2013.
- Ehsan Shahrian, Deepu Rajan, Brian Price, Scott Cohen. *Improving Image Matting using Comprehensive Sampling Sets*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2013 (oral).
- 2012 Bryan Morse, Joel Howard, Scott Cohen, Brian Price. *PatchMatch-based Content Completion of Stereo Image*. Proceedings of 3DIMPVT 2012 (Best Paper Award).
- 2011 Brian L. Price, Scott Cohen. *StereoCut: Consistent Interactive Object Selection in Stereo Image Pairs*. Proceedings of the IEEE International Conference on Computer Vision (ICCV), Nov. 2011.
- 2010 Brian L. Price. *Interactive Object Selection and Matting for Video and Images*. PhD dissertation, Brigham Young University, 2010.
- Brian L. Price, Bryan S. Morse, Scott Cohen. *Color Adjacency Modeling for Improved Image and Video Segmentation*. Proceedings of the International Conference on Pattern Recognition (ICPR) 2010.
- Brian L. Price, Bryan S. Morse, Scott Cohen. *Geodesic Graph Cut for Interactive Image Segmentation*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2010.
- Brian L. Price, Bryan S. Morse, Scott Cohen. *Simultaneous Foreground, Background, and Alpha Estimation for Image Matting*. Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR) 2010.
- 2009 Brian L. Price, Bryan S. Morse, Scott Cohen. *LIVEcut: Learning-based Interactive Video Segmentation by Evaluation of Multiple Propagated Cues*. Proceedings of the IEEE International Conference on Computer Vision (ICCV), Sept. 2009.
- 2007 Christopher J. Armstrong, Brian L. Price, William A. Barrett. *Interactive Segmentation of Image Volumes with Live Surface*. Computers and Graphics, vol. 31, 2. April 2007.
- 2006 Brian L. Price. *Image Vectorization*. Masters thesis, Brigham Young University, 2006.
- Brian Price, William Barrett. *Object-based Vectorization for Interactive Image Editing*. Visual Computer (Proceedings of Pacific Graphics 2006). Vol 22, No 9-11. Sept. 2006. p. 661-670.
- Christopher J. Armstrong, William A. Barrett, Brian Price. *Live Surface*. Proceedings of Volume Graphics 2006. August 2006.

Patents Issued

- 2023 Image Matting using Deep Learning. *Brian Price, Scott Cohen, Ning Xu, Stephen Schiller*. CN Patent ZL2017110633979. Jun. 30, 2023.

- Text refinement network. *Zhifei Zhang, Xingqian Xu, Zhaowen Wang, Brian Price*. US Patent 11688190. Jun. 27, 2023.
- Utilizing a segmentation neural network to process initial object segmentations and object user indicators within a digital image to generate improved object segmentations. *Brian Price, Su Chen, Shuo Yang*. US Patent 11676279. Jun. 13, 2023.
- Methods and systems for geometry-aware image contrast adjustments via image-based ambient occlusion estimation. *Long Mai, Yannick Hold-Geoffroy, Naoto Inoue, Daichi Ito, Brian Lynn Price*. US Patent 11663467. May 30, 2023.
- Instance-Level Semantic Segmentation. *Brian Price, Scott Cohen, Jimei Yang*. DE Patent 10 2017 006 558. May 25, 2023.
- Generating an image mask for a digital image by utilizing a multi-branch masking pipeline with neural networks. *He Zhang, Seyed Morteza Safdarnejad, Yilin Wang, Zijun Wei, Jianming Zhang, Salil Tambe, Brian Price*. US Patent 11651477. May 16, 2023.
- Machine learning training method, system, and device. *Brian Price, Yinan Zhao, Scott Cohen*. US Patent 11631162. Apr. 18, 2023.
- Generating Class-Agnostic Object Masks in Digital Images. *Brian Price, Scott Cohen, Mai Long, Jun Hao Liew*. US Patent 11587234. Feb. 21, 2023.
- Utilizing interactive deep learning to select objects in digital visual media. *Brian Price, Scott Cohen, Yinan Zhao*. US Patent 11568627. Jan. 31, 2023.
- 2022 Zhifei Zhang, Xingqian Xu, Zhaowen Wang, Brian Price. *Text Refinement Network*. GB Patent 2600806. Dec. 28, 2022.
- Brian Price, Scott Cohen, Henghui Ding. *Integrated Interactive Image Segmentation*. US Patent 11538170. Dec. 27, 2022.
- Scott Cohen, Walter Chang, Brian Price, Mohamed Hamdy, Mahmoud Elhoseiny. *Structured knowledge modeling and extraction from images*. US Patent 11514244. Nov. 29, 2022.
- Brian Price, Ruotian Luo, Scott Cohen. *Discriminative caption generation*. US Patent 11514252. Nov. 29, 2022.
- Curtis Wigington, Brian Price, Scott Cohen. *Neural Networks For Multi-label Classification Of Sequential Data*. US Patent 11468298. Oct 11, 2022.
- Scott Cohen, Brian Price, Abhinav Gupta. *Removing and Replacing Objects in Images according to a Directed User Conversation*. GB Patent 2569847. Sep 28, 2022.
- He Zhang, Seyed Morteza Safdarnejad, Yilin Wang, Zijun Wei, Jianming Zhang, Salil Tambe, Brian Price. *Automatically Generating a Trimap Segmentation for a Digital Image by Utilizing a Trimap Generation Neural Network*. US Patent 11393100. Jul 19, 2022.
- Ning Xu, Brian Price, Scott Cohen. *Image Object Segmentation based on Temporal Information*. US Patent 11379987. Jul 5, 2022.

- Scott Cohen, Henghui Ding, Brian Price. *Integrated Interactive Image Segmentation*. AU Patent 2021200645. Jun 23, 2022.
- Brian Price, Ning Xu, Naoto Inoue, Jimei Yang, Daicho Ito. *Line Drawing Generation*. JP Patent 7090113. Jun 15, 2022.
- Brian Price, Scott Cohen, Ning Xu. *Utilizing Interactive Deep Learning to Select Objects in Digital Visual Media*. US Patent 11314982. Apr 26, 2022.
- Scott Cohen, Marco Forte, Brian Price, Ning Xu. *Interactive Deep Matting*. AU Patent 2019283835. Apr 7, 2022.
- Scott Cohen, Jun Hao Liew, Long Mai, Brian Price. *Identifying Target Objects using Scale-diverse Segmentation Neural Networks*. US Patent 11282208. Mar 22, 2022.
- Scott Cohen, Jun Hao Liew, Long Mai, Brian Price. *Identifying Target Objects using Scale-diverse Segmentation Neural Networks*. AU Patent 2019250107. Mar 17, 2022.
- Brian Price, Scott Cohen, Marco Forte, Ning Xu. *Interactive Image Matting using Neural Networks*. GB Patent 2582689. Mar. 16, 2022.
- Scott Cohen, Walter Chang, Brian Price, Mohammed Elhoseiny. *Modeling, Extracting, and Localizing from Structured Knowledge of Images*. CN Patent 2016108160243. Mar 15, 2022.
- Xiaohui Shen, Zhe Lin, Kalyan Sunkavalli, Hengshuang Zhao, Brian Price. *Compositing Aware Digital Image Search*. US Patent 11263259. Mar. 1, 2022.
- Christopher Tensmeyer, Rajiv Jain, Curtis Wigington, Brian Price, Brian Davis. *Simulated Handwriting Image Generator*. US Patent 11250252. Feb. 15, 2022.
- Brian Price, Peng Zhou, Scott Cohen, Gregg Wilensky. *Digital Image Boundary Detection*. US Patent 11244460. Feb. 8, 2022.
- Brian Price, Yinan Zhao, Scott Cohen. *Digital Image Fill*. US Patent 11244430. Feb. 8, 2022.
- Scott Cohen, Abhinav Gupta, Brian Price. *VERA: Vision-enabled Replacement Assistant*. AU Patent 2018247342. Jan. 27, 2022.
- Scott Cohen, Kushal Kafle, Brian Price. *DVQA: Understanding Data Visualizations through Question Answering*. AU Patent 2018247340. Jan. 13, 2022.
- Zhe Lin, Radomir Mech, Xiaohui Shen, Brian Price, Jianming Zhang, Anant Gilra, Jen-Chan, Jeff Chien. *Image Cropping Suggestion using Multiple Saliency Maps*. US Patent 11222399. Jan. 11, 2022.
- 2021 Zhe Lin, Brian Price, Xiaohui Shen, Kalyan Sunkavalli, Hengshuang Zhao. *Compositing Aware Image Search*. AU Patent 2019201787. Dec. 16, 2021.
- Yu-Wei Chao, Scott Cohen, Brian Price, Jimei Yang. *Forecasting human dynamics from static images*. AU Patent 2018200164. Dec. 2, 2021.
- Scott Cohen, Long Mai, Jun Hao Liew, Brian Price. *Identifying Target Objects using Scale-Diverse Segmentation Neural Networks*. GB Patent 2583794. Nov 10, 2021.

- Scott Cohen, Zhe Lin, Brian Price, Xiaohui Shen, Peng Wang. *Joint Depth Estimation and Semantic Segmentation from a Single Image*. CN Patent ZL2016101833670. Oct. 22, 2021.
- Brian Price, Scott Cohen, Ning Xu, Stephen Schiller. *Image Matting using Deep Learning*. AU Patent 2017254848. Oct. 14, 2021.
- Brian Price, Scott Cohen, Jimei Yang. *Instance-level Semantic Segmentation*. AU Patent 2017206291. Sep. 30, 2021.
- Walter Chang, Scott Cohen, Mohamed Elhoseiny, Brian Price. *Structured Knowledge Modeling and Extraction from Images*. AU Patent 2016225819. Aug 5, 2021.
- Walter Chang, Scott Cohen, Mohamed Elhoseiny, Brian Price. *Structured Knowledge Modeling, Extraction and Localization from Images*. AU Patent 2016225820. Jul. 29, 2021.
- Mahmoud Afifi, Michael Brown, Brian Price, Scott Cohen. *Image White Balancing*. US Patent 11044450. June 22, 2021.
- Scott Cohen, Brian Price. *Image Recoloring for Color Consistency in a Digital Medium Environment*. US Patent 11010926. May 18, 2021.
- Brian Price, Scott Cohen, Marco Forte, Ning Xu. *Interactive Image Matting Using Neural Networks*. US Patent 11004208. May 11, 2021.
- Brian Price, Ning Xu, Naoto Innoue, Jimei Yang, Daichi Ito. *Line Drawing Generation*. US Patent 10922860. Feb. 16, 2021.
- Xiaohui Shen, Zhe Lin, Kalyan Sunkavalli, Hengshuang Zhao, Brian Price. *Compositing-aware Image Search*. GB Patent 2574087. Feb. 3, 2021.
- Brian Price, Scott Cohen, Ning Xu, Stephen Schiller. *Image Matting using Deep Learning*. GB Patent 2560219. Jan. 27, 2021.
- 2020 Scott Cohen, Brian Price, Gowri Somanath. *Stereo Correspondence and Depth Sensors*. US Patent 10,880,541. Dec. 29, 2020.
- Scott Cohen, Zhe Lin, Brian Price, Xiaohui Shen, Peng Wang. *Joint Depth Estimation and Semantic Labeling of a Single Image*. AU Patent 2016201908. Dec. 17, 2020.
- Brian Price, Vlad Morariu, Scott Cohen, Christopher Tensmeyer. *Table Layout Determination Using A Machine Learning System*. US Patent 10846524. Nov. 24, 2020.
- Ning Xu, Brian Price, Scott Cohen. *Image Object Segmentation Based on Temporal Information*. US Patent 10818014. Oct 27, 2020.
- Huixuan Tang, Scott Cohen, Stephen Schiller, Brian Price. *Depth Map Generation*. CN Patent ZL2015104844348. Oct. 27, 2020.
- Brian Price. *Image Segmentation for Live Camera Feeds*. CN Patent ZL2015104235674. Sep. 11, 2020.
- Scott Cohen, Brian Price, Kushal Kafle. *Question Answering for Data Visualizations*. US Patent 10754851. Aug 25, 2020.
- Xiaohui Shen, Zhe Lin, Kalyan Sunkavalli, Hengshuang Zhao, Brian Price. *Compositing Aware Digital Image Search*. US Patent 10747811. Aug 18, 2020.

- Brian Price, Scott Cohen, Yinan Zhao. *Digital Image Fill*. US Patent 10699388. June 30, 2020.
- Scott Cohen, Brian Price, Abhinav Gupta. *Removing and Replacing Objects in Images According to a Directed User Conversation*. US Patent 10613726. June 30, 2020.
- Brian Price, Byungmoon Kim. *Combined Selection Tool*. US Patent 10698588. June 30, 2020.
- Hailin Jin, John Collomosse, Brian Price. *Digital Media Environment for Style-Aware Patching in a Digital Image*. US Patent 10699453. June 30, 2020.
- Brian Price, Scott Cohen, Ning Xu, Stephen Schiller. *Image Matting using Deep Learning*. US Patent 10657652. May 19, 2020.
- Abhinav Gupta, Brian Price, Scott Cohen. *Removing and Replacing Objects in Images According to a Directed User Conversation*. US Patent 10613726. Apr 7, 2020.
- Scott Cohen, Walter Chang, Brian Price, Mohamed Elhoseiny. *Structured Knowledge Modeling and Extraction from Images*. GB Patent 2544853. Jan 1, 2020.
- 2019 Zhe Zhu, Brian Price, Scott Cohen. *Digital Image Processing for Element Removal and/or Replacement*. US Patent 10521567. Dec 31, 2019.
- Brian Price, Scott Cohen, Jimei Yang. *Instance-Level Semantic Segmentation*. GB Patent 2555896. Dec 4, 2019.
- Yu-Wei Chao, Jimei Yang, Scott Cohen, Brian Price. *Forecasting Multiple Poses Based on a Graphical Image*. US Patent 10475207. Nov 12, 2019.
- Scott Cohen, Walter Chang, Brian Price, Mohamed Elhoseiny. *Structured Knowledge Modeling, Extraction and Localization from Images*. US Patent 10460003. Oct 29, 2019.
- Scott Cohen, Brian Price, Gowri Somanath. *Stereo Correspondence and Depth Sensors*. US Patent 10455219. Oct 22, 2019.
- Brian Price, Scott Cohen. *Image Recoloring for Color Consistency in a Digital Medium Environment*. US Patent 10430973. Oct 1, 2019.
- Brian Price, Scott Cohen, Jimei Yang. *Instance-Level Semantic Segmentation System*. US Patent 10424064. Sep 24, 2019.
- Scott Cohen, Walter Chang, Brian Price, Mohamed Elhoseiny. *Structured Knowledge Modeling, Extraction and Localization from Images*. GB Patent 2544379. Sep 11, 2019.
- Huixuan Tang, Scott Cohen, Stephen Schiller, Brian Price. *Setting of a Digital Camera for Depth Map Refinement*. GB Patent 2533450. July 24, 2019.
- Huixuan Tang, Scott Cohen, Stephen Schiller, Brian Price. *Configuration Settings of a Digital Camera for Depth Map Generation*. GB Patent 2533449. July 24, 2019.
- Xiaohui Shen, Zhe Lin, Scott Cohen, Brian Price. *Image Depth Inference from Semantic Labels*. US Patent 10346996. Jul 9, 2019.

- Zhe Lin, Radomir Mech, Xiaohui Shen, Brian Price, Jianming Zhang, Anant Gilra, Jeff Chien. *Image Cropping Suggestion Using Multiple Saliency Maps*. US Patent 10346951. Jul 9, 2019.
- Yu-Wei Chao, Jimei Yang, Scott Cohen, Brian Price. *Forecasting Multiple Poses Based on a Graphical Image*. GB Patent 2561277. June 5, 2019.
- Zhe Zhu, Brian Price, Scott Cohen. *Digital Image Processing through use of an Image Repository*. US Patent 10339642. Jul 2, 2019.
- Xiaohui Shen, Bryan Russell, Peng Wang, Scott Cohen, Brian Price, Jonathan Eisenmann. *Planar Region Guided 3D Geometry Estimation From a Single Image*. US Patent 10290112. May 14, 2019.
- Brian Price, Scott Cohen, Ning Xu, Stephen Schiller. *Image Matting Using Deep Learning*. US Patent 10255681. Apr 9, 2019.
- Huixuan Tang, Scott Cohen, Stephen Schiller, Brian Price. *Configuration Settings of a Digital Camera for Depth Map Generation*. CN Patent ZL2015104846663. Apr. 5, 2019.
- Scott Cohen, Brian Price, Chenxi Zhang. *Stereo Correspondence Model Fitting*. US Patent 10249052. Apr 2, 2019.
- Brian Price, Ian Sachs. *Probabilistic Determination of Selected Image Portions*. US Patent 10241661. Mar 26, 2019.
- Brian Price. *Image Segmentation for a Live Camera Feed*. GB Patent 2529060. Mar. 20, 2019.
- Dafang He, Scott Cohen, Brian Price, Mike Kraley, Paul Asente. *Page Segmentation of Vector Graphic Documents*. US Patent 10223585. Mar. 5, 2019.
- Yu-Wei Chao, Jimei Yang, Scott Cohen, Brian Price. *Forecasting Multiple Poses Based on a Graphical Image*. GB Patent 2561277. Feb. 22, 2019.
- Brian Price, Scott Cohen, Ning Xu. *Utilizing Interactive Deep Learning to Select Objects in Digital Visual Media*. US Patent 10192129. Jan. 29, 2019.
- Brian Price, Scott Cohen, Jie Feng. *User Input-based Object Selection Using Multiple Visual Cues*. US Patent 10175867. Jan. 8, 2019.
- Zhe Zhu, Brian Price, Scott Cohen. *Digital Image Processing including Refinement Layer, Search Context Data, or DRM*. US Patent 10169549. Jan. 1, 2019.
- 2018 Huixuan Tang, Scott Cohen, Stephen Schiller, Brian Price *Settings of a Digital Camera for Depth Map Refinement*. CN Patent ZL201510484211.1. Dec. 14, 2018.
- Scott Cohen, Brian Price, Bryan Morse, Joel Howard. *Target Region Fill Utilizing Transformations*. CN Patent ZL201410181748.6. Nov. 9, 2018.
- Jimei Yang, Yu-Wei Chao, Scott Cohen, Brian Price. *Forecasting Multiple Poses Based on a Graphical Image*. US Patent 10096125. Oct. 9, 2018.
- Brian Price, Ian Sachs. *Probabilistic Determination of Selected Image Portions*. US Patent 10055107. Aug. 21, 2018.
- Zhe Lin, Scott Cohen, Peng Wang, Xiaohui Shen, Brian Price. *Joint Depth Estimation and Semantic Labeling of a Single Image*. US Patent 10019657. Jul. 10, 2018.

- Xiaohui Shen, Bryan Russell, Peng Wang, Scott Cohen, Brian Price, Jonathan Eisenmann. *Planar Region Guided 3D Geometry Estimation From a Single Image*. US Patent 9990728. Jun. 5, 2018.
- Xiaoyong Shen, Ian Sachs, Eli Shechtman, Brian Price, Aaron Hertzmann, Sylvain Paris. *Utilizing Deep Learning for Automatic Digital Image Segmentation and Stylization*. US Patent 9978003. May 22, 2018.
- Scott Cohen, Brian Price, Bryan Morse, Joel Howard. *Target Region Fill Utilizing Transformations*. GB Patent 2520613. May 16, 2018.
- 2017 Huixuan Tang, Scott Cohen, Stephen Schiller, Brian Price. *Depth Map Generation*. GB Patent 2532541. Dec. 20, 2017.
- Zhe Lin, Radomir Mech, Xiaohui Shen, Brian Price, Jianming Zhang. *Image Zooming*. US Patent 9805445. Oct. 31, 2017.
- Brian Price. *Image Segmentation for a Live Camera Feed*. US Patent 9774793. Sep. 26, 2017.
- Xiaoyong Shen, Ian Sachs, Eli Shechtman, Brian Price, Aaron Hertzmann, Sylvain Paris. *Utilizing Deep Learning for Automatic Digital Image Segmentation and Stylization*. US Patent 9773196. Sep. 26, 2017.
- Zhe Lin, Scott Cohen, Peng Wang, Xiaohui Shen, Brian Price. *Joint Depth Estimation and Semantic Labeling of a Single Image*. GB Patent 2538847. Sep. 6, 2017.
- Jimei Yang, Brian Price, Scott Cohen, Zhe Lin. *Image Object Segmentation Using Examples*. US Patent 9,607,391. Mar. 28, 2017.
- Zhe Lin, Radomir Mech, Xiaohui Shen, Brian Price, Jianming Zhang, Anant Gilra, Jeff Chien. *Image Cropping Suggestion Using Multiple Saliency Maps*. US Patent 9,626,584. Apr. 18, 2017.
- 2016 Huixuan Tang, Scott Cohen, Stephen Schiller, Brian Price. *Settings of a Digital Camera for Depth Map Refinement*. US Patent 9,521,391. Dec. 13, 2016.
- Huixuan Tang, Scott Cohen, Stephen Schiller, Brian Price. *Depth Map Generation*. US Patent 9,479,754. Oct. 25, 2016.
- Zhe Lin, Radomir Mech, Xiaohui Shen, Brian Price, Jianming Zhang. *Saliency Map Computation*. US Patent 9,454,712. Sep. 27, 2016.
- Brian Price, Scott Cohen, Jimei Yang. *Labeling Objects in Image Scenes*. US Patent 9,396,546. July 19, 2016.
- Scott Cohen, Brian Price, Bryan Morse, Joel Howard. *Stereoscopic Target Region Filling*. US Patent 9,380,286. June 28, 2016.
- Scott Cohen, Brian Price, Bryan Morse, Joel Howard. *Target Region Filling Involving Source Regions, Depth Information, or Occlusions*. US Patent 9,350,969. May 14, 2016.
- Huixuan Tang, Scott Cohen, Stephen Schiller, Brian Price. *Settings of a Digital Camera for Depth Map Refinement*. US Patent 9,307,221. Apr. 5, 2016.

- Huixuan Tang, Scott Cohen, Stephen Schiller, Brian Price. *Configuration Settings of a Digital Camera for Depth Map Generation*. US Patent 9,307,222. Apr. 5, 2016.
- Huixuan Tang, Scott Cohen, Stephen Schiller, Brian Price. *Depth Map Generation*. US Patent 9,292,926. Mar. 22, 2016.
- 2015 Scott Cohen, Brian Price, Chenxi Zhang. *Belief Propagation and Affinity Measures*. US Patent 9,214,026. Dec. 15, 2015.
- Scott Cohen, Brian Price, Chenxi Zhang. *Stereo Correspondence Smoothness Tool*. US Patent 9,208,547. Dec. 8, 2015.
- Scott Cohen, Brian Price, Gowri Somanath. *Depth Map Stereo Correspondence Techniques*. US Patent 9,135,710. Sept. 15, 2015.
- Scott Cohen, Brian Price, Ejaz Ahmed. *Semantic Object Selection*. US Patent 9,129,191. Sept. 8, 2015.
- Scott Cohen, Brian Price, Ejaz Ahmed. *Semantic Object Proposal Generation and Validation*. US Patent 9,129,192. Sept. 8, 2015.
- Brian Price, Scott Cohen, Jacqueline Feild, Gavin Miller. *Image Matting and Alpha Value Techniques*. US Patent 9,064,318. June 23, 2015.
- Scott D. Cohen, Brian L. Price, Chenxi Zhang, Jonathan W. Brandt. *Stereo Aware Image Editing*. US Patent 9,098,930. Apr. 4, 2015.
- 2014 Paul Asente, Scott Cohen, Brian Price, Lesley Northam. *Methods and Apparatus for Correcting Disparity Maps Using Statistical Analysis on Local Neighborhoods*. US Patent 8,873,835. Oct. 28, 2014.
- 2013 Scott Cohen, Brian Price. *Object Selection in Stereo Image Pairs*. US Patent 8,610,712. May 23, 2013.

Awards

Best Paper Runner Up at ICME 2020.
Tech Excellence Award winner from Adobe.
CVPR 2019 Outstanding Reviewer.
Named *Distinguished Inventor* at Adobe.
Best Session award at the Adobe Tech Summit 2015.
Best Paper award - 3DIMPVT 2012.
CI Fellowship recipient.
National Merit Scholarship recipient.

Invited talks

"Understanding Data Visualizations via Question Answering", ICDAR 2021 Workshop on Document Visual Question Answering, Sep 2021.
"Machine Learning, Graphics, Vision, HCI, and AR/VR at Adobe Research Workshop", Bowie State University. Mar 2021.

"Gaining a Deeper Visual Understanding of Documents", Text and Documents in the Deep Learning Era, CVPR workshops, June 2020.

"Interactive Video Object Segmentation", 1st Large-scale Video Object Segmentation Challenge, ECCV workshops, Sept 2018.

"SceneStitch", Adobe MAX Sneaks, Oct 2017.

"The Past, Present, and Future of Document Analysis", Brigham Young University, Sep 2017.

"Interactive Object Selection in Images using Deep Learning", GPU Technology Conference, May 2017.

"Advances in Image Analysis and Understanding", United States Patent and Trademark Office Tech Fair, Mar 2017.

"Advancements in Object Selection in Images", Brigham Young University, Mar 2017.

"Why You Should Get a PhD", Brigham Young University, Nov 2015.

"Matting and Composition in Professional Workflows", CVPR 2015 tutorial: Computer Vision for Visual Effects, June 2015.

"Image Matting", UC Merced, Feb 2014.

"Image Matting", "Video Matting", "Future challenges for matting", ICCV Matting tutorial, Dec 2013.

Professional Service

Area Chair for CVPR 2023.

Finance Chair for CVPR 2022.

Area Chair for WACV 2022.

Area Chair for CVPR 2021.

Co-organizer of the 1st Large-scale Video Object Segmentation Challenge (ECCV 2018 workshops).

Area Chair for WACV 2016.

Technical Program Committee member for ICCV 2023, 2021, 2019, 2015, 2013, 2011; CVPR 2022, 2020, 2019, 2018, 2016, 2015, 2014, 2013, 2012, 2011, 2010; ECCV 2020; ACCV 2014; SIGGRAPH Asia 2014; Eurographics 2009; SIGGRAPH 2007, 2017.

Reviewer for IJPRAI, TCSVT, TPAMI, TIP, IJCV, MICCAI, TOG, Visual Computer. Selection Committee for Adobe Research Fellowship 2017.

Selection Committee for Adobe Research Women-In-Technology Scholarship 2016, 2017.

Corporate Sponsorship Chair for ICCV 2015.

Demo Award Selection Committee for ICCV 2015.

Industry Chair for ACCV 2014.

Demo Award Selection Committee for CVPR 2014.

Mentor for the National Consortium for Graduate Engineering Degrees for Minorities (GEM) Fellowship program - 2013-14.

Co-organizer of matting tutorial at ICCV 2013.