

# Stephen Tierney

Sydney  
NSW, Australia

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## EDUCATION

- **Charles Sturt University** Bathurst, Australia  
*PhD Computer Science* Feb. 2013 - May 2017
  - Studied machine learning with a focus on image processing and computer vision related tasks. Developed a number of novel methods in these fields involving the use of convex optimisation, manifold optimisation, big data optimisation and novel penalties.
- **Charles Sturt University** Bathurst, Australia  
*Bachelor of Computer Science (Games Technology)* 2009-2012
  - Graduated with First Class Honours.

## TEACHING EXPERIENCE

- **University of Sydney** Sydney, Australia  
*Lecturer* Semester 1, 2017
  - Lecturer for QBUS5001 Quantitative Methods for Business
  - Delivered weekly lectures and supported students as one of four lecturers, for over 800 enrolled students
  - Material covers traditional statistical hypothesis testing and linear models.
- **University of Sydney** Sydney, Australia  
*Tutor* Semester 1, 2017
  - Tutor for QBUS6840 Predictive Analytics
  - Solely responsible for development of tutorial material, delivery of 7 tutorials per week and assignment/exam marking for over 250 enrolled students
  - Tutorials cover practical implementation of data science and time series techniques using Python
- **University of Sydney** Sydney, Australia  
*Tutor* Semester 2, 2016
  - Tutor for QBUS6810 Statistical Learning and Data Mining
  - Solely responsible for development of tutorial material and delivery of 4 tutorials per week for over 170 enrolled students
  - Tutorials cover practical implementation of data science techniques using Python
- **Charles Sturt University** Bathurst, Australia  
*Subject Coordinator* 2014
  - Subject coordinator for ITC368 Image Processing and Analysis at CSU.
  - This involved subject preparation (course structure, assignments and exam), lecturing, tutoring and marking.
- **Charles Sturt University** Bathurst, Australia  
*Subject Coordinator* 2013
  - Subject coordinator for ITC527 Concurrent Programming.
  - This involved subject preparation (course structure, assignments and exam), lecturing, tutoring and marking.
- **Charles Sturt University** Bathurst, Australia  
*Casual Lecturer and Marker* 2012
  - Casual lecturer and exam marker for ITC222 Computer Organisation.

## RESEARCH EXPERIENCE

- **CSIRO** North Ryde, Australia  
*Casual Researcher* 2013 - 2016
  - Worked under the direction of Dr. Yi Guo on machine learning and computer vision problems on remote sensing data.
  - This employment was part of the CSIRO PhD Top-up scholarship scheme
- **Charles Sturt University** Bathurst, Australia  
*Research Assistant* 2012
  - Research assistant under supervision of Prof. Junbin Gao.

## TECHNICAL SKILLS

- Programming Languages: MATLAB, C, C++, Java, Python, C#, Objective-C (iOS and OS X)
- Web Programming and Databases: HTML, Javascript, SQL
- Source control tools: Git, Github, SVN
- Embedded Systems: Arduino
- Command Line Interfaces: Unix-like shells
- Typesetting:  $\text{\LaTeX}$

## AWARDS AND SCHOLARSHIPS

Australian Postgraduate Awards Scholarship	2013 - 2016
CSIRO PhD Top-up Scholarship	2013 - 2016
DICTA14 Best Student Paper	2014
CSU Faculty of Business Honours Research Assistant Scholarship	2012
CSU Honours Scholarship	2012
CSU Honours SCF Exempt Award	2012
CSU Deans List for Academic Performance in Session One	2011
CSU School of Computing and Mathematics Prize for Academic Excellence in Third Year Games Technology	2011
CSU Science Scholarship	2009 - 2012

## SELECTED OPEN SOURCE PROJECTS

Please see my Github profile for a more complete list <https://github.com/sjtrny>

- **SMTV**
  - *Selective Multisource Total Variation Regularisation*
    - SMTV automatically produces a low noise image by fusing multiple noisy source images
    - Language: MATLAB
    - <https://github.com/sjtrny/smtv>
- **CurveLRR**
  - *Low-Rank Representation of Curve Data*
    - CurveLRR automatically clusters data on the curve manifold using Low-Rank Representation
    - Language: MATLAB
    - <https://github.com/sjtrny/curveLRR>

- **Fusebox**  
*Pansharpening and Hyperspectral Image Fusion Toolbox*
  - Fusebox is a toolbox containing implementations of many popular pansharpening and image fusion methods used in the remote sensing community
  - Language: MATLAB
  - <https://github.com/sjtrny/curveLRR>
- **SubKit**  
*MATLAB library of Subspace Clustering Algorithms*
  - Language: MATLAB
  - <https://github.com/sjtrny/SubKit>

## PUBLICATIONS

### 2016

- **Stephen Tierney**, Yi Guo, Junbin Gao. Efficient Sparse Subspace Clustering by Nearest Neighbour Filtering. Submitted to Neurocomputing.
- **Stephen Tierney**, Junbin Gao, Yi Guo, Zhengwu Zhang. Low-Rank Representation over the Manifold of Curves. Submitted to JMLR.
- **Stephen Tierney**, Yi Guo, Junbin Gao. Collaborative Low-Rank Subspace Clustering. Submitted to Neurocomputing.

### 2015

- Yi Guo, Junbin Gao, Feng Li, **Stephen Tierney** and Ming Yin. Low Rank Sequential Subspace Clustering. IJCNN15.
- **Stephen Tierney**, Yi Guo, Junbin Gao. Segmentation of Subspaces in Sequential Data (Preprint available on arXiv).
- **Stephen Tierney**, Yi Guo, Junbin Gao. Selective Multi-Source Total Variation Image Restoration. DICTA 2015.

### 2014

- **Stephen Tierney**, Yi Guo and Junbin Gao. Affinity Pansharpening and Image Fusion. DICTA 2014 (Best Student Paper).
- **Stephen Tierney**, Yi Guo and Junbin Gao. The W-Penalty and its Application to Alpha Matting with Sparse Labels. DICTA 2014.
- **Stephen Tierney**, Yi Guo and Junbin Gao. Subspace Clustering for Sequential Data. CVPR 2014.

### 2013

- **Stephen Tierney**, Geoff Bull and Junbin Gao. Image Matting for Sparse User Input by Iterative Refinement. DICTA 2013.

### 2012

- **Stephen Tierney** and Junbin Gao. Natural Image Matting with Total Variation Regularisation. DICTA 2012.