Milind Padalkar

Curriculum Vitae

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Education

2011–2017 **Ph.D. in Information and Communication Technology**,
Dhirubhai Ambani Institute of Information and Communication Technology (DA-IICT), Gandhinagar, India,
CPI: 9.00/10
Thesis title: *Novel Techniques for Auto-inpainting in Heritage Reconstruction*
Supervisor: Dr. Manjunath V. Joshi

2008–2010 **M.Tech. in Computer Engineering**,
Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat, India,
CGPA: 8.75/10
Thesis title: *Histogram Based Efficient Video Shot Detection Algorithms*
Supervisor: Dr. Mukesh A. Zaveri

2004–2008 **B.E. in Information Technology**,
Finolex Academy of Management and Technology (FAMT), Ratnagiri, University of Mumbai, India,
Aggregate Percentage: 61.67%
Project title: *Content Based Image Retrieval System*
Supervisor: Prof. Santosh V. Jadhav

2004 **Higher Secondary Certificate (H.S.C.)**,
Maharashtra State Board, India,
Percentage: 80.50%

2002 **Secondary School Certificate (S.S.C.)**,
Maharashtra State Board, India,
Percentage: 85.86%

Publications

Book

[1] **M. G. Padalkar**, M. V. Joshi, and N. L. Khatri, *Digital Heritage Reconstruction Using Super-resolution and Inpainting*, B. A. Barsky, Ed. Synthesis Lectures on Visual Computing, Morgan & Claypool Publishers, Dec. 2016. DOI: 10.2200/S00740ED1V01Y201611VCP026.

Book Chapter

[1] **M. G. Padalkar** and M. V. Joshi, "Automatic detection and inpainting of defaced regions and cracks in heritage monuments," in *Digital Hampi: Preserving Indian Cultural Heritage*, A. Mallik, S. Chaudhury, V. Chandru, and S. Srinivasan, Eds. Springer Singapore, 2017. DOI: 10.1007/978-981-10-5738-0_14.

Journal

[1] **M. G. Padalkar** and M. V. Joshi, "Auto-inpainting heritage scenes: A complete framework for detecting and infilling cracks in images and videos with quantitative assessment," *Machine Vision and Applications*, vol. 26, no. 2-3, pp. 317–337, 2015. DOI: 10.1007/s00138-015-0661-6.

Conferences and Workshops

[1] M. Zohaib, M. Taiana, **M. G. Padalkar**, and A. Del Bue, "3D key-points estimation from single-view RGB images," in *21st International Conference on Image Analysis and Processing (**ICIAP**)*, [Accepted (**Oral**)], May 2022.

[2] C. Beltrán-González, **M. G. Padalkar**, and A. Del Bue, "Enhancing machine learning pipelines on industrial applications," in *Workshop: AI for Industry, Second CINI National Conference on Artificial Intelligence (Ital-IA)*, Feb. 2022, p. 113. [Online]. Available: https://www.ital-ia2022.it/assets/zip/industria.zip.

[3] **M. G. Padalkar**, C. Beltrán-González, and A. Del Bue, "Multi-illumination fusion with crack enhancement using cycle-consistent losses," in *2021 IEEE International Conference on Image Processing (**ICIP**)*, Sep. 2021, pp. 2898–2902. DOI: 10.1109/ICIP42928.2021.9506013.

[4] **M. G. Padalkar**, C. Beltrán-González, M. Bustreo, A. Del Bue, and V. Murino, "A versatile crack inspection portable system based on classifier ensemble and controlled illumination," in *2020 25th International Conference on Pattern Recognition (**ICPR**)*, 2020, pp. 4009–4016. DOI: 10.1109/ICPR48806.2021.9412039.

[5] **M. G. Padalkar**, M. V. Joshi, and N. Khatri, "Simultaneous inpainting and super-resolution using self-learning," in *Proc. 26th British Machine Vision Conference (**BMVC**)*, Jan. 2015, pp. 105.1–105.12. DOI: 10.5244/C.29.105.

[6] **M. G. Padalkar**, M. V. Vora, M. V. Joshi, M. A. Zaveri, and M. S. Raval, "Identifying Vandalized Regions in Facial Images of Statues for Inpainting," in ***ICIAP 2013 Workshop** on Multimedia for Cultural Heritage*, Sep. 2013, pp. 208–217. DOI: 10.1007/978-3-642-41190-8_23.

[7] **M. G. Padalkar**, M. A. Zaveri, and M. V. Joshi, "SVD Based Automatic Detection of Target Regions for Image Inpainting," in *Computer Vision - **ACCV 2012 Workshops***, Nov. 2012, pp. 61–71. DOI: 10.1007/978-3-642-37484-5_6.

[8] **M. G. Padalkar**, M. V. Joshi, M. A. Zaveri, and C. M. Parmar, "Exemplar based Inpainting using Autoregressive Parameter Estimation," in *Proc. International Conference on Signal, Image and Video Processing **ICSIVP***, [**Oral**], Jan. 2012, pp. 154–160, ISBN: 978-93-81583-19-7.

[9] **M. G. Padalkar** and M. A. Zaveri, "Dissolve Detection Based Shot Identification Using Singular Value Decomposition," in *Proc. Fourth Asia International Conference on Mathematical/Analytical Modelling and Computer Simulation **AMS***, [**Oral**], May 2010, pp. 312–316. DOI: 10.1109/AMS.2010.69.

International Exposure

Papers Presented • ICIP2021 (virtual), • ICPR2020 (virtual), • XRCI Open 2016 (2 posters), • BMVC2015 (poster), • MM4CH2013 (virtual), • ICSIVP2012 (oral), • AMS2010 (oral).

Events Attended ■ NCVPRIPG2017, ■ ACM Distinguished Speaker talk by Prof. Brian A. Barsky (UC Berkeley), ■ NCVPRIPG2013, ■ ICVGIP2012, ■ DVAP2012.

Services

Reviewer • EUSIPCO2022, • BMVC2021, • SUMAC2021, • PReMI2019, • MDPI Journals (Imaging, Applied Sciences, Sensors), • ICES Journal of Marine Science, • Multimedia Tools and Applications, • IEEE Access, • Imaging Science Journal, • ICAPR2015.

Organizing Committee Member 3rd ACCV Workshop on e-Heritage, held in conjunction with ACCV2014.

Skills

Programming • C/C++[2], • Python[1,2], • Matlab[4].

Libraries ▪ OpenCV[1,2], ▪ Qt[2], ▪ PyTorch[1,2], ▪ Keras (with Tensorflow)[2], ▪ CAFFE[3].

Publishing • LaTeX, • MS Office, • LibreOffice.

Operating Systems ▪ Microsoft Windows, ▪ Linux.

Awards

Sept. 2015 Awarded the *Xerox Research Centre India Travel Grant (₹ 1,25,000)* to attend the 26^{th} British Machine Vision Conference (BMVC2015) at Swansea, United Kingdom.

Experience

Jan. 2019 – till date **Postdoc**,
Pattern Analysis and Computer Vision / Visual Geometry and Modelling, Istituto Italiano di Tecnologia (IIT), Genova, Italy.
Supervisors: Prof. Vittorio Murino (Jan. 2019 – Aug. 2019) & Dr. Alessio Del Bue (Aug. 2019 onwards),
Summary: Worked on an automatic visual inspection system in collaboration with an industrial partner, to detect defects like cracks in the tiles of combustion chambers using different sensor modalities. For this purpose, developed new techniques to automate tile area detection, crack identification and multi-illumination image fusion by applying computer vision and deep learning based methods. Also involved in the development of a prototype that can be used to (a) acquire tile images under varying illumination conditions, (b) annotate ground truth, as well as (c) detect defects in real industrial environment. Outcomes of this work have been published in ICPR2020 and ICIP2021. Currently working on another industrial project involving detection of defects in textile yarn.

[1] Current active usage.
[2] Actively used in the last 3 years.
[3] Actively used between 2017–2018; not since.
[4] Actively used until 2017; not as much since.

Mar. 2017 – Dec. 2018 **Senior Research Engineer**,
Vehant Technologies, NOIDA, India,
Summary: Developed a novel technique for license plate super-resolution using convolutional neural networks. Worked on vehicle color recognition. Guided design engineers and interns on various projects including traffic-light phase recognition, vehicle counting, optical character recognition, image registration, vehicle model recognition using underside images, vehicle logo recognition, helmet detection, and object recognition in X-ray images

Apr. 2016 – Jul. 2016 **Teaching Assistant**,
DA-IICT, Gandhinagar, India,
Maintained the "University Student Project Management and Evaluation System" (USPMES) at DA-IICT

Aug. 2011 – Mar. 2016 **Junior Research Fellow (JRF)**,
DA-IICT, Gandhinagar, India,
Project: "Immersive Navigation for a Walk-through Application", a part of the *Indian Digital Heritage Project* funded by Department of Science and Technology (DST), Govt. of India

Feb. 2011 – Jul. 2011 **Assistant Professor**,
MCA Department,
Sardar Patel Institute of Technology, Mumbai, India

Jan. 2011 – Feb. 2011 **Lecturer**,
Department of Information Technology,
Sardar Patel Institute of Technology, Mumbai, India

Competitive Exams

2007 **Graduate Aptitude Test in Engineering (GATE)**,
Discipline: Information Technology,
All India Rank: 46

Extra Curricular Activities

2007–2008 General Secretary of the institute (FAMT)

2007–2008 Chief Coordinator of the Information Technology Students Association (FAMT)

2005–2007 Coordinator for Athletics – Annual Sports (FAMT)

1999–2007 Participated and won in various games like Athletics, Chess and Football at College, Division, State and National level events

2001–2002 Awarded as the *National Athlete of the Year* by school (Vidya Vikasini English High School, Vasai, India)

Hobbies

♪♩♬♫ Playing musical instruments like mouth-organ & guitar.

Blog I also like to write articles in my blog: http://milindpadalkar.wordpress.com

References

- **Dr. Alessio Del Bue**
  Senior Researcher Tenured - Principal Investigator,
  Head of PAVIS and VGM,
  Istituto Italiano di Tecnologia, Genova, Italy
  https://www.iit.it/people/alessio-delbue
  ✉ *alessio.delbue@iit.it* ☎ +39 010 2897 423
- **Dr. Manjunath V. Joshi**
  Professor,
  DA-IICT, Gandhinagar, India
  http://intranet.daiict.ac.in/∼mv_joshi/
  ✉ *mv_joshi@daiict.ac.in* ☎ +91 79 30510611
- **Dr. Mukesh A. Zaveri**
  Professor, Computer Engineering Department,
  SVNIT, Surat, India
  https://svnit.ac.in/maz/
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