Sunil V Kalmady

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POSITION

Adjunct Professor,
Department of Computing Science,
Faculty of Science,
University of Alberta.

Senior Machine Learning Specialist,
Department of Medicine,
Faculty of Medicine & Dentistry,
University of Alberta.

EDUCATION

INSTITUTION	DEGREE	AWARDED	FIELD OF STUDY
National Institute of Mental Health and Neurosciences, Bangalore	Doctor of Philosophy	Feb 2015	Neuroscience / Computational Psychiatry
Sikkim Manipal University, Manipal	Master of Science	May 2014	Computer Science
Manipal University, Manipal	Master of Science	July 2008	Medical Biotechnology
Manipal University, Manipal	Bachelor of Science	July 2006	Medical Biotechnology

PROFESSIONAL STATEMENT

My professional goal is to advance the options for personalized treatment of complex medical disorders via application of machine learning and data science. To this end, I have undergone extensive post-doctoral training in Alberta Machine Intelligence Institute (AMII), one of Canada's three artificial intelligence centers of excellence. My qualifications are complemented by over 5 years of research experience in developing, evaluating and deploying machine learning models using various structured and unstructured real-word healthcare datasets. In my current position as an adjunct professor of computing science and a senior machine learning specialist, I focus on developing learning tools to predict prognostic outcomes in cardiovascular diseases using electronic medical records, electrocardiograms and echocardiograms at the population scale. In the past, I have developed successful AI methods to identify and predict specific symptom clusters and treatment responses in psychiatric disorders such as Schizophrenia and OCD using multimodal imaging, which have been published in distinguished journals such as Nature Schizophrenia and featured in several news reports.

EMPLOYMENT

INSTITUTION	RESPONSIBILITIES	DATE
Alberta Machine Intelligence Institute, Edmonton & University of Alberta, Edmonton	**Post-doctoral Fellowship** Machine learning / Artificial Intelligence in healthcare	Oct 2016 – Jan 2020
Canadian VIGOUR Centre, University of Alberta, Edmonton	**Subject matter lead for AI/ML team** Work with large-scale population level health datasets to uncover novel and actionable insights that can potentially drive clinical decision making.	Feb 2020 –
Dept of Computing Science, University of Alberta, Edmonton	**Adjunct Professor** Liaison between faculty of computing science and medicine on various projects wrt psychiatric and cardiovascular diseases - including both empirical and foundational research; (co) supervising students; writing research grants.	Aug 2022 –

TEACHING / MENTORING EXPERIENCE (@ University of Alberta)

- Recruitment and training of interns, visiting students, undergraduate & masters students.
- Included assessment and recruitment, day to day mentoring of research activities, academic and administrative support, ensuring deliverables by the end of the project

Machine Learning Research
(With Dr. Russell Greiner)

1. Patrick Schwartz (UARE Intern, 2017)
2. Johannes Kilian Langer (UARE Intern, 2017)
3. Amir Forouzandehmoghadam (MSc CS 2018, Committee member)
4. Alex Rutar (Undergraduate Math, 2018)
5. Nitin Choudhary (UARE Intern, 2018)
6. Rohan Panda (Visiting Student, 2021)
7. Robert Joseph George (Undergraduate Math, 2021)
8. Zehra Shah (PhD CS, 2021)

Computational Psychiatry Research
(With Drs. Russell Greiner, Andrew Greenshaw, Serdar Dursun, Matthew Brown)

9. Reyhaneh Ghoreishiamiri (MSc CS 2017, Committee member)
10. Ezgi Ince Guliyev (Visiting Clinical Scientist, 2017)

11. Animesh Kumar Paul (MSc CS 2019, CMPUT 605 Course instructor & Committee member)
12. Harleen Chhabra (International Collaborator, 2019-)
13. Anushree Bose (International Collaborator, 2019-)
14. Sreeraj V (International Collaborator, 2019-)
15. Bahareh Behroozi Asl (Graduate NMHI, 2021)
16. Zheqi Lv (CS undergraduate, 2022)

Cardiovascular AI Research
(With Drs. Padma Kaul, Abram Hindle, Russell Greiner, Robert Holte)

17. Weijie Sun (MSc CS, 2019)
18. Alexander Wong (MSc CS, 2019)
19. Amir Salimi (MSc CS, 2019)
20. Yousef Nademi (MSc CS, 2020)
21. Zihan Wang (Undergraduate CEng, 2021)
22. Anita Khalafbeigi (MSc CS, 2021)
23. Junyao Cui (Undergraduate CS, 2021)
24. Akshay Valsaraj (MITACS Intern, 2021)
25. Vaibhav Sharma (MITACS Intern, 2021)
26. Manisimha Varma (MITACS Intern, 2022)
27. Amarsh Gautam (MITACS Intern, 2022)

Bioinformatics Research
(With Drs. Ratmir Derda, Basil Hubbard, Russ Greiner)

28. Sharyar Memon (Undergraduate, 2021)
29. Marwan Khyree (Undergraduate, 2022)

CONTRIBUTIONS TO GRANTS (successful / active applications)

1. Simon & Martina Sochatsky Fund for Mental Health - University Hospital Foundation 2020 (PI: Sunil Kalmady)
2. Canada-UK Artificial Intelligence Initiative 2019 (PI: Francois Bolduc)
3. AMII Resource Allocation Proposals 2020, 2021, 2022. (PI: Russ Greiner)
   RAPs: Computational Psychiatry, Domain Adaptation, Survival Prediction
4. Wellcome Trust India Alliance: Clinical Research Center for Neuromodulation in Psychiatry 2020 (PI: G Venkatasubramanian)
5. Wellcome Trust ECF 2020 (PI: Anushree Bose)
6. CIHR Ontario-Alberta Covid19 Grant 2021 (PI: Douglas Lee, Finlay McAlister)
7. Canadian Institutes of Health Research Grant 2021 (PI: Padma Kaul)

8. Patient-Centered Outcomes Research Institute Grant 2022 (PI: Roopinder Sandu, decision pending)

PEER-REVIEWED RESEARCH PUBLICATIONS

Pubmed
Publications: 86 (on 20 Nov 2022)
URL: https://www.ncbi.nlm.nih.gov/pubmed/?term=Kalmady+S%5BAuthor%5D+OR+Kalmadi+SV%5BAuthor%5D

Google Scholar
Citations: 1939, h-index: 23, i10-index: 55 (on 3 Aug 2022)
URL: https://scholar.google.co.in/citations?user=R5SqbZEAAAAJ&hl=en

List of publications

Original Research – as first or corresponding author

1. Sun W, **Kalmady SV**, Sepehrvand N, Chu LM, Wang Z, Salimi A, Hindle A, Greiner R, Kaul P. Improving ECG-based COVID-19 diagnosis and mortality predictions using pre-pandemic medical records at population-scale. 'Learning from Time Series for Health' workshop in the 36th Conference on Neural Information Processing Systems, USA 2022.
2. **Kalmady SV**, Paul AK, Narayanaswamy JC, et al. Prediction of Obsessive-Compulsive Disorder: Importance of neurobiology-aided feature design and cross-diagnosis transfer learning. Biological Psychiatry: Cognitive Neuroscience and Neuroimaging. 2021; S2451-9022 (21).
3. Sun W, **Kalmady SV**, Salimi A, Sepehrvand N, Ly E, Hindle A, Greiner R, Kaul P. ECG for high-throughput screening of multiple diseases: Proof-of-concept using multi-diagnosis deep learning from population-based datasets. 'Medical Imaging meets NeurIPS' workshop in the 35th Conference on Neural Information Processing Systems, Australia 2021.
4. **Kalmady SV**, Sun W, Ezekowitz J, Fine N, Howlett J, Savu A, Greiner R, Kaul P. Improving the Calibration of Long Term Predictions of Heart Failure Rehospitalizations using Medical Concept Embedding. Advancement of Artificial Intelligence (AAAI) Spring Symposium 2021. Proceedings of Machine Learning Research: 70-82.
5. **Kalmady SV**, Paul AK, Greiner R, et al. Extending Schizophrenia diagnostic model to predict Schizotypy in first degree relatives. NPJ Schizophr 2020,6(1):30.
6. **Kalmady SV**, Greiner R, Agrawal R, et al. Towards artificial intelligence in mental health by improving schizophrenia prediction with multiple brain parcellation ensemble-learning. NPJ Schizophr. 2019;5(1):2.
7. **Kalmady SV**, Agrawal R, Venugopal D, et al. CHRFAM7A gene expression in schizophrenia: clinical correlates and the effect of antipsychotic treatment. J Neural Transm. 2018;125(4):741-748.

8. **Kalmady SV**, Shivakumar V, Jose D, et al. Plasma cytokines in minimally treated schizophrenia. Schizophr Res. 2018;199:292-296.
9. **Kalmady SV**, Shivakumar V, Arasappa R, et al. Clinical correlates of hippocampus volume and shape in antipsychotic-naïve schizophrenia. Psychiatry Res Neuroimaging. 2017;263:93-102.
10. Agrawal R, **Kalmady SV**, Venkatasubramanian G. In Silico Model-driven Assessment of the Effects of Brain-derived Neurotrophic Factor Deficiency on Glutamate and Gamma-Aminobutyric Acid: Implications for Understanding Schizophrenia Pathophysiology. Clin Psychopharmacol Neurosci. 2017;15(2):115-125.
11. **Kalmady SV**, Shivakumar V, Gautham S, et al. Dermatoglyphic correlates of hippocampus volume: Evaluation of aberrant neurodevelopmental markers in antipsychotic-naive schizophrenia. Psychiatry research Sep 9 2015.
12. **Kalmady SV**, Venkatasubramanian G, Shivakumar V, et al. Relationship between Interleukin-6 gene polymorphism and hippocampal volume in antipsychotic-naive schizophrenia: evidence for differential susceptibility? PloS one 2014;9(5):e96021.
13. **Kalmady SV**, Venkatasubramanian G, Arasappa R et al. Evolutionary genetic analyses of MEF2C gene: implications for learning and memory in Homo sapiens. Asian journal of psychiatry Feb 2013;6(1):56-59.
14. **Kalmady SV**, Agarwal SM, Shivakumar V, et al. Revisiting Geschwind's hypothesis on brain lateralisation: a functional MRI study of digit ratio (2D:4D) and sex interaction effects on spatial working memory. Laterality 2013;18(5):625-640.
15. **Kalmady SV**, Venkatasubramanian G, Shivakumar V, et al. Relationship between Brain-Derived Neurotrophic Factor and Schneiderian First Rank Symptoms in Antipsychotic-Naive Schizophrenia. Frontiers in psychiatry 2013;4:64.
16. **Kalmady SV**, Venkatasubramanian G. Evidence for positive selection on Protocadherin Y gene in Homo sapiens: implications for schizophrenia. Schizophrenia research Mar 2009;108(1-3):299-300.

Original Research – as co-author

17. Forouzandeh A, Rutar A, **Kalmady SV**, Greiner R. Analyzing Biomarker Discovery: Estimating the Reproducibility of Biomarker Sets. PLOS ONE 17(7): e0252697.
18. Panda R, **Kalmady SV**, Greiner R. Multi-source Domain Adaptation Techniques for Mitigating Batch Effects: A Comparative Study. Frontiers in Neuroinformatics. 2022; 16:805117.
19. Lee DS, Wang CX, McAlister FA, Ma S, Chu A, Rochon PA, Kaul P, Austin PC, Wang X, **Kalmady SV**, et al. Factors associated with SARS-CoV-2 test positivity in long-term care homes: A population-based cohort analysis using machine learning. The Lancet Regional Health-Americas. 2022; 6:100146.
20. Yan K, Triana V, **Kalmady SV**, Aku-Dominguez K, Memon S, Brown A, Greiner R, Derda R. Learning the structure–activity relationship (SAR) of the Wittig reaction from genetically-encoded substrates. Chemical science. 2021;12(42):14301-8.
21. Lee DS, Ma S, Chu A, Wang CX, Wang X, Austin PC, McAlister FA, **Kalmady SV** et al. Predictors of mortality among long-term care residents with SARS-CoV-2 infection. Journal of the American Geriatrics Society. 2021;69(12), pp.3377-3388.

22. Wong AW, Sun W, **Kalmady SV**, Kaul P, Hindle A. Multilabel 12-Lead Electrocardiogram Classification Using Gradient Boosting Tree Ensemble. 2020 Comput Cardiol. 2020;00:1–4.

23. Shivakumar V, Sreeraj VS, **Kalmady SV**, et al. Pars Triangularis Volume Asymmetry and Schneiderian First Rank Symptoms in Antipsychotic-naïve Schizophrenia. Clinical Psychopharmacology and Neuroscience. 2021 Aug 31;19(3):507.

24. Wong AW, Salimi A, Hindle A, **Kalmady SV**, Kaul P. Multilabel 12-lead Electrocardiogram Classification Using Beat To Sequence Autoencoders. 2021 IEEE International Conference on Acoustics, Speech and Signal Processing.

25. Narayanaswamy JC, Subramaniam A, Bose A, Agarwal SM, **Kalmady SV**, et al. Antisaccade task performance in obsessive-compulsive disorder and its clinical correlates. Asian Journal of Psychiatry. 2021 Mar 1;57:102508.

26. Reddy PV, Anandan S, Rakesh G, Shivakumar V, Joseph B, **Kalmady SV**, et al. Emotion Processing Deficit in Euthymic Bipolar Disorder: A Potential Endophenotype. Indian Journal of Psychological Medicine. 2021:02537176211026795.

27. Yang M, Petralia F, Li Z, Li H… **Kalmady SV**… et al. Community assessment of the predictability of cancer protein and phosphoprotein levels from genomics and transcriptomics. Cell systems. 2020 Aug 26;11(2):186-95.

28. Rajasekaran A, Shivakumar V, **Kalmady SV**, et al. Impact of NRG1 HapICE gene variants on digit ratio and dermatoglyphic measures in schizophrenia. Asian Journal of Psychiatry. 2020 Dec 1;54:102363.

29. Shivakumar V, Rajasekaran A, Subbanna M, **Kalmady SV**, et al. Leukocyte mitochondrial DNA copy number in schizophrenia. Asian Journal of Psychiatry. 2020 Oct 1;53:102193

30. Chhabra H, Bose A, Shivakumar V… **Kalmady SV**… et al. Tolerance of transcranial direct current stimulation in psychiatric disorders: an analysis of 2000+ sessions. Psychiatry Research. 2020 Feb 1;284:112744.

31. Shivakumar V, Sreeraj VS, Subbanna M, **Kalmady SV**, et al. Differential impact of interleukin-6 promoter gene polymorphism on hippocampal volume in antipsychotic-naïve schizophrenia patients. Indian Journal of Psychiatry. 2020 Jan;62(1):36.

32. Narayanaswamy JC, Jose D, Agarwal SM, **Kalmady SV**, et al. Neuro-hemodynamic endophenotypes of emotional interference in OCD: fMRI study using emotion counting stroop task. Asian J Psychiatr. 2019;39:35-41.

33. Bose A, Nawani H, Agarwal SM, Shivakumar V, **Kalmady SV**, et al. Effect of fronto-temporal transcranial direct current stimulation on corollary discharge in schizophrenia: A randomized, double-blind, sham-controlled mediation analysis study. Schizophr Res. 2019;204:411-412.

34. Amaresha AC, **Kalmady SV**, Joseph B, et al. Short term effects of brief need based psychoeducation on knowledge, self-stigma, and burden among siblings of persons with schizophrenia: A prospective controlled trial. Asian J Psychiatr. 2018;32:59-66

35. Bhalerao GV, Parlikar R, Agrawal R, Shivakumar V, **Kalmady SV**, et al. Construction of population-specific Indian MRI brain template: Morphometric comparison with Chinese and Caucasian templates. Asian J Psychiatr. 2018;35:93-100.

36. Bose A, Shivakumar V, Agarwal SM, **Kalmady SV**, et al. Efficacy of fronto-temporal transcranial direct current stimulation for refractory auditory verbal hallucinations in schizophrenia: A randomized, double-blind, sham-controlled study. Schizophr Res. 2018;195:475-480.

37. Chhabra H, Shivakumar V, Subbanna M, **Kalmady SV**, et al. Gene polymorphisms and response to transcranial direct current stimulation for auditory verbal hallucinations in schizophrenia. Acta Neuropsychiatr. 2018;30(4):218-225.

38. Shivakumar V, Debnath M, Venugopal D, Rajasekaran A, **Kalmady SV**, et al. Influence of correlation between HLA-G polymorphism and Interleukin-6 (IL6) gene expression on the risk of schizophrenia. Cytokine. 2018;107:59-64.

39. Shivakumar V, **Kalmady SV**, Rajasekaran A, et al. Telomere length and its association with hippocampal gray matter volume in antipsychotic-naïve/free schizophrenia patients. Psychiatry Res Neuroimaging. 2018;282:11-17.

40. Subramaniam A, Danivas V, Mahavir Agarwal S, **Kalmady S**, et al. Clinical correlates of saccadic eye movement in antipsychotic-naïve schizophrenia. Psychiatry Res. 2018;259:154-159.

41. Venugopal D, Shivakumar V, Subbanna M, **Kalmady SV**, et al. Impact of antipsychotic treatment on methylation status of Interleukin-6 [IL-6] gene in Schizophrenia. J Psychiatr Res. 2018;104:88-95.

42. Harave VS, Shivakumar V, **Kalmady SV**, et al. Neurocognitive Impairments in Unaffected First-degree Relatives of Schizophrenia. Indian J Psychol Med. 2017;39(3):250-253.

43. Narayanaswamy JC, Jose D, Shivakumar V, Shrinivasa B, Kaur M, **Kalmady SV**, et al. Plasma insulin-like growth factor-1 levels and response to selective serotonin reuptake inhibitor treatment: A prospective study of medication-naïve OCD patients. Asian J Psychiatr. 2017;28:65-66.

44. Rajasekaran A, Shivakumar V, **Kalmady SV**, et al. The impact of HLA-G 3' UTR variants and sHLA-G on risk and clinical correlates of schizophrenia. Human immunology. 2016 Aug 24.

45. Narayanaswamy JC, Jose D, **Kalmady SV**, et al. Cerebellar volume deficits in medication-naive obsessive compulsive disorder. Psychiatry Research. 2016 Aug 30;254:164-8

46. Agrawal R, **Kalmady SV**, Venkatasubramanian G. In silico Model-driven Assessment of the Effects of BDNF deficiency on Glutamate & GABA: Implications for understanding Schizophrenia Pathophysiology. Clinical Psychopharmacology and Neuroscience. 2016.

47. Chhabra H, Sowmya S, Sreeraj VS, **Kalmady SV**, et al. Auditory false perception in schizophrenia: Development and validation of auditory signal detection task. Asian journal of psychiatry. 2016 24:23-7

48. Rajasekaran A, Shivakumar V, **Kalmady SV**, et al. The impact of IL10 polymorphisms and sHLA-G levels on the risk of schizophrenia. Asian journal of psychiatry. 2016 23:39-43

49. Agarwal SM, Bose A, Shivakumar V, Narayanaswamy JC, Chhabra H, **Kalmady SV**, et al. Impact of antipsychotic medication on transcranial direct current stimulation (tDCS) effects in schizophrenia patients. Psychiatry research Jan 30 2016;235:97-103

50. Subramaniam A, Agarwal SM, **Kalmady S**, et al. Effect of Transcranial Direct Current Stimulation on Prefrontal Inhibition in Schizophrenia Patients with Persistent Auditory Hallucinations: A Study on Antisaccade Task Performance. Indian journal of psychological medicine Oct-Dec 2015;37(4):419-422.

51. Narayanaswamy JC, Jose D, **Kalmady SV**, et al. Pituitary volume in medication-naive adults with obsessive compulsive disorder. The Journal of neuropsychiatry and clinical neurosciences Spring 2015;27(2):e97-99.

52. Narayanaswamy JC, **Kalmady SV**, Venkatasubramanian G, et al. Clinical correlates of superior temporal gyrus volume abnormalities in antipsychotic-naive schizophrenia. The Journal of neuropsychiatry and clinical neurosciences. Spring 2015;27(2):e128-133.

53. Rao NP, Venkatasubramanian G, Ravi V, **Kalmady S**, et al. Plasma cytokine abnormalities in drug-naive, comorbidity-free obsessive-compulsive disorder. Psychiatry research Oct 30 2015;229(3):949-952.

54. Jose D, Narayanaswamy JC, Agarwal SM, **Kalmady SV**, et al. Corpus callosum abnormalities in medication-naive adult patients with obsessive compulsive disorder. Psychiatry research Mar 30 2015;231(3):341-345.

55. Rajasekaran A, Shivakumar V, **Kalmady SV**, et al. Soluble human leukocyte antigen (sHLA)-G levels may predict early onset of schizophrenia in male patients. Tissue antigens Jul 2015;86(1):36-37.

56. Sivakumar PT, **Kalmady SV**, Venkatasubramanian G, et al. Volumetric analysis of hippocampal sub-regions in late onset depression: a 3 tesla magnetic resonance imaging study. Asian journal of psychiatry Feb 2015;13:38-43.

57. Jayarajan RN, Agarwal SM, Viswanath B, **Kalmady SV**, et al. A Voxel Based Morphometry Study of Brain Gray Matter Volumes in Juvenile Obsessive Compulsive Disorder. Journal of the Canadian Academy of Child and Adolescent Psychiatry Fall 2015;24(2):84-91.

58. Agarwal SM, Danivas V, Amaresha AC, Shivakumar V, **Kalmady SV**, et al. Cognitive mapping deficits in schizophrenia: Evidence from clinical correlates of visuospatial transformations. Psychiatry research Aug 30 2015;228(3):304-311.

59. Shivakumar V, **Kalmady SV**, Amaresha AC, et al. Serum vitamin D and hippocampal gray matter volume in schizophrenia. Psychiatry research Aug 30 2015;233(2):175-179.

60. Shivakumar V, Chhabra H, Subbanna M, Agarwal SM, Bose A, **Kalmady SV**, et al. Effect of tDCS on auditory hallucinations in schizophrenia: Influence of catechol-O-methyltransferase (COMT) Val158Met polymorphism. Asian journal of psychiatry Aug 2015;16:75-77.

61. Bose A, Shivakumar V, Narayanaswamy JC, Nawani H, Subramaniam A, Agarwal SM, Chhabra H, **Kalmady SV**, et al. Insight facilitation with add-on tDCS in schizophrenia. Schizophrenia research Jun 2014;156(1):63-65.

62. Amaresha AC, Danivas V, Shivakumar V, Agarwal SM, **Kalmady SV**, et al. Clinical correlates of parametric digit-symbol substitution test in schizophrenia. Asian journal of psychiatry Aug 2014;10:45-50.

63. Holla B, Viswanath B, Agarwal SM, **Kalmady SV**, et al. Visual Image-Induced Craving for Ethanol (VICE): Development, Validation, and a Pilot fMRI Study. Indian journal of psychological medicine Apr 2014;36(2):164-169.

64. Narayanaswamy JC, **Kalmady SV**, Cherian AV, et al. Neuroanatomical correlates of naturalistic long-term outcome of obsessive-compulsive disorder treated with selective serotonin reuptake inhibitors. Journal of clinical psychopharmacology Apr 2014;34(2):282-285.

65. Shivakumar V, **Kalmady SV**, Gautham S, et al. Planum parietale volume in antipsychotic-naive schizophrenia. The Journal of neuropsychiatry and clinical neurosciences Winter 2013;25(1):E35-36.

66. Narayanaswamy JC, Jose D, **Kalmady S**, et al. Clinical correlates of nucleus accumbens volume in drug-naive, adult patients with obsessive-compulsive disorder. The Australian and New Zealand journal of psychiatry Oct 2013;47(10):930-937.

67. Divakaran A, Narayanaswamy JC, **Kalmadi SV**, et al. Parent-of-origin Effect in Schizophrenia and Non-affective Psychoses: Evidence from Dermatoglyphics. Indian journal of psychological medicine Jul 2013;35(3):260-267.

68. Hariprasad VR, Varambally S, Shivakumar V, **Kalmady SV**, et al. Yoga increases the volume of the hippocampus in elderly subjects. Indian journal of psychiatry Jul 2013;55(Suppl 3):S394-396.

69. Agarwal SM, Jose D, Baruah U, Shivakumar V, **Kalmady SV**, et al. Neurohemodynamic Correlates of Washing Symptoms in Obsessive-compulsive Disorder: A Pilot fMRI Study Using Symptom Provocation Paradigm. Indian journal of psychological medicine Jan 2013;35(1):67-74.

70. Danivas V, **Kalmady SV**, Venkatasubramanian G, et al. Thalamic shape abnormalities in antipsychotic naive schizophrenia. Indian journal of psychological medicine Jan 2013;35(1):34-38.

71. Narayanaswamy JC, Jose DA, **Kalmady SV**, et al. Clinical correlates of caudate volume in drug-naive adult patients with obsessive-compulsive disorder. Psychiatry research Apr 30 2013;212(1):7-13.

72. Venkatasubramanian G, Rao NP, Arasappa R, **Kalmady SV**, et al. A Longitudinal Study of Relation between Side-effects and Clinical Improvement in Schizophrenia: Is There a Neuro-metabolic Threshold for Second Generation Antipsychotics? Clinical psychopharmacology and neuroscience : Apr 2013;11(1):24-27.

73. Divakaran A, Narayanaswamy JC, **Kalmady SV**, et al. Family history correlates of digit ratio abnormalities in schizophrenia. Indian journal of psychological medicine Oct 2012;34(4):355-359.

74. Jose SP, Sharma E, Narayanaswamy JC, Rajendran V, **Kalmady SV**, et al. Entorhinal Cortex Volume in Antipsychotic-naive Schizophrenia. Indian journal of psychological medicine Apr 2012;34(2):164-169.

75. Virupaksha HS, **Kalmady SV**, Shivakumar V, et al. Volume and asymmetry abnormalities of insula in antipsychotic-naive schizophrenia: a 3-tesla magnetic resonance imaging study. Indian journal of psychological medicine Apr 2012;34(2):133-139.

76. Kalyani BG, Venkatasubramanian G, Arasappa R, Rao NP, **Kalmady SV**, et al. Neurohemodynamic correlates of 'OM' chanting: A pilot functional magnetic resonance imaging study. International journal of yoga Jan 2011;4(1):3-6.

77. Rao NP, **Kalmady S**, Arasappa R, et al. Clinical correlates of thalamus volume deficits in anti-psychotic-naive schizophrenia patients: A 3-Tesla MRI study. Indian journal of psychiatry Jul 2010;52(3):229-235.
78. Venkatasubramanian G, **Kalmady SV**. Creativity, psychosis and human evolution: The exemplar case of neuregulin 1 gene. Indian journal of psychiatry Jul 2010;52(3):282.
79. Venkatasubramanian G, Arasappa R, Rao NP, Behere RV, **Kalmady S**, et al. Inverse relationship between serum high density lipoprotein and negative syndrome in antipsychotic-naive schizophrenia. Clinical chemistry and laboratory medicine : CCLM / FESCC 2010;48(1):95-98.
80. Behere RV, **Kalmady SV**, Venkatasubramanian G, et al. Orbitofrontal Lobe Volume Deficits in Antipsychotic-Naive Schizophrenia: A 3-Tesla MRI study. Indian journal of psychological medicine Jul 2009;31(2):77-81.
81. Danivas V, **Kalmady S**, Arasappa R, et al. Inferior parietal lobule volume and schneiderian first-rank symptoms in antipsychotic-naive schizophrenia: a 3-tesla MRI study. Indian journal of psychological medicine Jul 2009;31(2):82-87.

Reviews

82. Chhabra H, Shivakumar V, Agarwal SM, Bose A, Venugopal D, Rajasekaran A, Subbanna M, **Kalmady SV**, et al. Transcranial direct current stimulation and neuroplasticity genes: implications for psychiatric disorders. Acta neuropsychiatrica Apr 16 2015:1-10.
83. Shivakumar V, **Kalmady SV**, Venkatasubramanian G, et al. Do schizophrenia patients age early? Asian journal of psychiatry Aug 2014;10:3-9.
84. Bose A, Agarwal SM, **Kalmady SV**, et al. Cognitive mapping deficits in schizophrenia: a critical overview. Indian journal of psychological medicine Jan 2014;36(1):9-26.
85. Agarwal SM, Shivakumar V, Bose A, Subramaniam A, Nawani H, Chhabra H, **Kalmady SV**, et al. Transcranial direct current stimulation in schizophrenia. Clinical psychopharmacology and neuroscience Dec 2013;11(3):118-125.

Clinical case reports / series / pilot studies

86. Agarwal SM, Shivakumar V, **Kalmady SV**, et al. Neural Correlates of a Perspective-taking Task Using in a Realistic Three-dimensional Environment Based Task: A Pilot Functional Magnetic Resonance Imaging Study. Clin Psychopharmacol Neurosci. 2017;15(3):276-281.
87. Taylor ST, Chhabra H, Sreeraj VS, Shivakumar V, **Kalmady SV**, et al. Neural Effects of Transcranial Direct Current Stimulation in Schizophrenia: A Case Study using Functional Near-infrared Spectroscopy. Indian J Psychol Med. 2017;39(5):691-694.
88. Narayanaswamy JC, Jose DA, Mahavir Agarwal S, Nawani H, **Kalmady SV**, et al. Gray matter correlates of symptom dimensions in a large sample of patients with obsessive compulsive disorder. European Neuropsychopharmacology. 2016 26(5):895-6.
89. Narayanaswamy JC, Jose D, Chhabra H, Agarwal SM, Shrinivasa B, Hegde A, Bose A, **Kalmady SV**, et al. Successful Application of Add-on Transcranial Direct Current

Stimulation (tDCS) for Treatment of SSRI Resistant OCD. Brain stimulation May-Jun 2015;8(3):655-657.

90. Nawani H, **Kalmady SV**, Bose A, et al. Neural basis of tDCS effects on auditory verbal hallucinations in schizophrenia: a case report evidence for cortical neuroplasticity modulation. The journal of ECT Mar 2014;30(1):e2-4.

91. Nawani H, Bose A, Agarwal SM, Shivakumar V, Chhabra H, Subramaniam A, **Kalmady S**, et al. Modulation of corollary discharge dysfunction in schizophrenia by tDCS: preliminary evidence. Brain stimulation May-Jun 2014;7(3):486-488.

92. Shivakumar V, Bose A, Rakesh G, Nawani H, Subramaniam A, Agarwal SM, **Kalmady SV**, et al. Rapid improvement of auditory verbal hallucinations in schizophrenia after add-on treatment with transcranial direct-current stimulation. The journal of ECT Sep 2013;29(3):e43-44.

93. Meherwan Mehta U, Agarwal SM, **Kalmady SV**, et al. Enhancing putative mirror neuron activity with magnetic stimulation: a single-case functional neuroimaging study. Biological psychiatry Aug 1 2013;74(3):e1-2.

94. Jhamnani K, Shivakumar V, **Kalmady S**, et al. Successful use of add-on minocycline for treatment of persistent negative symptoms in schizophrenia. The Journal of neuropsychiatry and clinical neurosciences Winter 2013;25(1):E06-07.

FELLOWSHIPS / TRAVEL GRANTS

- MITACS Accelerate Fellowship (Oct 2017 – Oct 2018)
  Supervisor: Prof. Russell Greiner
  Partner Organization: IBM Alberta Centre for Advanced Studies

- FENS-IBRO travel grant – Federation of European neuroscience (FENS) Forum, Copenhagen, Denmark , 2016
- INCF Travel Award – Neuroinformatics Congress, Boston, USA, 2015
- Department of Science & Technology Travel Award – Society of Biological Psychiatry 66th Annual Meeting, San Francisco, USA, 2011
- Young Investigator Travel Award – The 2nd Asian Congress on Schizophrenia Research, Seoul, South Korea, 2011

INVITED TALKS (Selected)
- Canadian Symposium for Computational Neuroscience, 2021, Canada
- Advancement of Artificial Intelligence (AAAI) Spring Symposium 2021, Canada
- CVC Town Hall Series 2021, Canada
- AMII's next AI Meetup 2019, Canada
- Alberta Imaging Symposium 2017, Canada
- International Symposium on Translational Neuroscience 2014 , India

ADVISOR TO INDUSTRY

- [BrainSightAI](#)
- [NumiousAI](#)

NEWS: TV / RADIO / PRESS

Predicting early symptoms of schizophrenia in relatives of patients

- Radio Interview: [Danielle Smith Talk Show](#) (28 Jan 2021)
- [AI used to predict early symptoms of schizophrenia in relatives of patients](#) - eurekalert! (26 Jan 2021)
- [Machine learning tool used to predict early symptoms of schizophrenia in relatives of patients](#) - miragenews (26 Jan 2021)
- [This machine could help diagnose schizophrenia earlier: U of A study](#) - CTVnews (26 Jan 2021)
- [AI Predicts Schizophrenia Symptoms in At-Risk Population](#) - Technology networks (27 Jan 2021)
- [AI used to predict early symptoms of schizophrenia in relatives of patients](#) - DotMed (27 Jan 2021)
- [Machine learning tool used to predict early symptoms of schizophrenia in relatives of patients](#) - Folio (26 Jan 2021)

Diagnosing Schizophrenia accurately in early untreated stage

- [Using Artificial Intelligence to predict Schizophrenia](#) - Research Matters (22 Jan 2019)
- [Nimhans partners Canadian varsity to build AI capability for schizophrenia diagnosis](#) - Tech Circle (23 Jan 2019)
- Schizophrenia identified in brain scans: U of A researchers - [Edmonton Journal,](#) [Canoe](#) (28 Jan 2019)
- [Artificial intelligence for mental health](#) - Ualberta News (28 Jan 2019)
- Artificial intelligence can help diagnose schizophrenia, U of A researchers say - [The Star](#) (28 Jan 2019), [Our Windsor](#) (29 Jan 2019)
- Radio Interview: [630 CHED Morning News](#) with Bruce Bowie (29 Jan 2019)
- Improved AI-based tool increases accuracy of schizophrenia diagnosis - [Folio](#) (30 Jan), [Medical Express, Nikola News](#) (31 Jan 2019), [ECN](#) (1 Feb 2019)
- [UAlberta researchers marry AI-learning and psychiatry for schizophrenia diagnosis](#) - Taproot Edmonton (30 Jan 2019)
- [This AI tool can diagnose schizophrenia with 87% accuracy](#) - The Economic Times (1 Feb 2019), [Vadodara Live (in Hindi)](#) (2 Feb 2019)
- (Turkish) [Artificial intelligence will work for mental health](#) - Hurriyet (1 Feb 2019)
- (Russian) An improved AI-based tool will help scientists improve the accuracy of schizophrenia diagnosis - [DNI24](#) (1 Feb 2019), [Fishki](#) (2 Feb 2019)

- (Arabic) Using Artificial Intelligence To Predict Schizophrenia - JISR labs (2 Feb 2019)
- (Japanese) AI can diagnose schizophrenia with high accuracy - The Medical AI Times (3 Feb 2019)
- New AI tool increases accuracy of schizophrenia diagnosis - The Pioneer, Business Standard, Times of India (1 Feb 2019), Hindustan Times, CT News, Marathtimes (in Marati) (3 Feb 2019), AITopics - AAAI (4 Feb 2019)
- Scientists develop AI-powered tool to accurately diagnose schizophrenia - Asean breaking News, International Business Times (2 Feb 2019)
- AI diagnoses schizophrenia from brain scans - IEEE GlobalSpec (5 Feb 2019)
- Increasing accuracy of Schizophrenia diagnosis with AI - Medical View (6 Feb 2019)
- How AI is more accurately diagnosing schizophrenia – making it easier for doctors to treat patients - Compelo (26 Feb 2019)
- AI identifies schizophrenia with 87% accuracy - AI in Healthcare (26 Feb 2019)
- AI detects schizophrenia from fMRIs with 87% accuracy - Health Imaging (28 Feb 2019)
- How AI may help diagnose mental illnesses - Research Stash, Indian Science Journal, The Hindu Businessline, Down To Earth, VigyanPrasar (6 Mar 2019)
- AI to Help Diagnose Mental Diseases such as Schizophrenia - Review Health World (7 Mar 2019)
- AI can help diagnose mental illnesses - Telangana Today (11 Mar 2019)
- AI to diagnose schizophrenia - Health Issues India (19 Mar 2019)
- (Turkish) Artificial Intelligence can now Detect Schizophrenia! - Tamindir (10 Apr 2019)
- Breakthrough Study by U of A Schizophrenia Researcher Featured on German Television Show (01 Dec 2019)

Also, this research was featured in -

- (Spanish) Our favorites of January: 5 posts of the sector that you should not miss - LUCA AI Powered Decisions (6 Feb 2019)
- 6 Practical Applications of Artificial Intelligence that are impacting Major Industries Worldwide - iTrain (26 Feb 2019)
- Randy Cassingham's 'This is True' Podcast - Extending Thinking Beyond Humans (Time: 11:15) - 11 Mar 2019
- Singularity Pulse Volume 65 -Decimal Point Analytics (11 Mar 2019)
- (Personal Interview in Turkish) Artificial intelligence-backed robot army diagnosed schizophrenia with high accuracy - Hurriyet (10 Apr 2019)
- #empaschiz hashtag on Twitter

A story on this research was aired on german national TV show nano (channel 3Sat) - AI against schizophrenia (Time: 21:50) - 2 Oct 2019