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| **Title:** A Genetic Programming Approach to Designing Convolutional Neural Network Architectures  **Main author:** Masanori Suganuma  **Year:** 2017  **Link:** <https://dl.acm.org/citation.cfm?id=3071229> |
| **Journal:**  ACM Digital Library  **Citations:** 85  **Pages:** 9 |
| **Structure of the paper**   1. Abstract 2. Introduction 3. Related work    * Hyper parameter Optimization    * Evolutionary Neural Networks    * Reinforcement Learning Approach 4. CNN Architecture Design using Cartesian Programming    * Representation of CNN Architectures    * Evolutionary Algorithm 5. Experiments and Results    * Datasets    * Experimental Setup    * Result of a default Scenario    * Result of a small-data scenario 6. Conclusion 7. Further Experiment in The Default Scenario. 8. Detailed Experimental Settings and Code. |
| **Detail of figures and plots**  **Regarding GP approach to Designing CNN Architecture.**   1. Overview of the method. This method represents CNN architectures based on Cartesian genetic programming. The CNN architecture is trained on a learning task and assigned the validation accuracy of the trained model as the fitness. The evolutionary algorithm searches the better architectures. |
| **Experimental setup and experimentation**   * **Experiment-1:** CIFAR-10 Dataset   + **Compared with:** State of the art CNNs   + **Outputs:** Error rates.   + **Output structure:** Tabular |
| **A brief summary of the proposed work [one paragraph]**  The researchers in this paper have optimized the CNNs using Cartesian Genetic Programming. They have represented CNNs in genes and have evolved them through evolutionary algorithms. They have used CIFR-10 benchmark dataset to train these CNNs. The results were competing the state of the art CNNs. |
| **Critical review**  They have used only **CIFAR-10** dataset only they could have used some other datasets as well. |
| **Any idea to upgrade the concept** |
| **Name five papers from references, you’d like to read next**   1. Evolving Deep Neural Networks In Proceedings of the Genetic and Evolutionary Computation Conference 2. Neural architecture search with reinforcement learning. |
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