

Preface

It is our conviction that the *means of construction of artificial neural network topologies* is an important area of research. The value of such models is potentially vast. From an applied viewpoint, identifying the appropriate design mechanisms would make it possible to address scalability and complexity issues, which are recognized as major concerns transversal to several communities. From a fundamental viewpoint, the important features behind complex network design are yet to be fully understood, even as partial knowledge becomes available, but scattered within different communities.

Unfortunately, this endeavour is split among different, often disparate domains. We started a workshop in the hope that there was significant room for sharing and collaboration between these researchers. Our response to this perceived need was to gather like-motivated researchers into one place to present both novel work and summaries of research portfolio.

It was under this banner that we originally organized the DevLeaNN workshop, which took place at the Complex Systems Institute in Paris in October 2011. We were fortunate enough to attract several notable speakers and co-authors: H. Berry, C. Dimitrakakis, S. Doncieux, A. Dutech, A. Fontana, B. Girard, Y. Jin, M. Joachimczak, J. F. Miller, J.-B. Mouret, C. Ollion, H. Paugam-Moisy, T. Pinville, S. Rebecchi, P. Tonelli, T. Trappenberg, J. Triesch, Y. Sandamirskaya, M. Sebag, B. Wróbel, and P. Zheng. The proceedings of the original workshop are available online, at <http://www.devleann.iscpif.fr>. To capitalize on this grouping of like-minded researchers, we moved to create an expanded book. In many (but not all) cases, the workshop contribution is subsumed by an expanded chapter in this book.

In an effort to produce a more complete volume, we invited several additional researchers to write chapters as well. These are: J. A. Bednar, Y. Bengio, D. B. D'Ambrosio, J. Gauci, and K. O. Stanley. The introduction chapter was also co-authored with us by S. Chevallier.

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Enjoy!

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