Introduction to Deep Computational Genomics

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Abstract

Thanks to the advance of many ground breaking technologies in sequencing, the scope of Genomics has expanded several times in recent years. These extremely high throughput technologies generate information in an unprecedented rate, however, leveraging these data to facilitate the understanding to the messages encoded in DNA is still challenging. Although with a complete three-billion-base human genome sequence in hand, we human embarrassingly know only next to nothing to the basis of Genomics. Just before all of us are submerged by the tsunami of data, deep learning, the once glimmering machine learning discipline, has resurrected and bailed us out. With the help of GPU computing and Data Science, we can now let machines discover the mechanisms underlying biological phenomena and pathways with only little domain knowledge. Welcome to the era of Deep Computational Genomics!