Multidisciplinary Approaches and AIs

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Ⅰ. Abstract

The development of multiple multidisciplinary projects led to the creation of new technologies and strategies that were mostly not designed at the start of the projects. As a result, the new technologies and strategies themselves open doors for new possibilities beyond the scope of these projects. This talk will start with a few exemplified multidisciplinary technologies and strategies that have been developed or are being developed to resolve the obstacles encountered during the development of the projects. Then digital control, coding and CNC systems came into play towards multidisciplinary AIs.

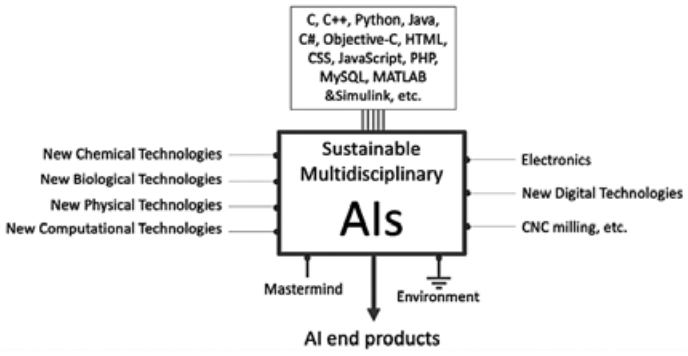
Ⅱ. Results & Discussion

In a chemistry project that aimed for chemical synthesis of polysaccharides, a novel polyglycosylation approach was developed to tackle the problem and showed for the first time a pattern of polycondensation from monomeric oligosaccharides. This polyglycosylation technology if further developed could itself enable the chemical access to polysaccharides that is not possible so far.

In a biophysical project that aimed for detection of molecular interaction of oligosaccharides with a membrane protein at the single-molecule level, a DIB-fusion system was developed to enable same-pore experiments for various experiments.

In a biological system, a new antibacterial strategy that combines antibodies and antibacterials presented new opportunities in the fight against drug-resistant bacteria.

More recently, multiple new technologies that incorporated digital control and coding are being developed to enable the extension of the capabilities of existing instruments and devices towards (semi-) automation and integration, which will eventually foster sustainable multidisciplinary AIs that will benefit academia, industries and a human-centered sustainable AI planet. On the other hand, new educational strategies need to be developed to catch up with these trends accordingly.



Ⅲ. Conclusion

Cross-disciplinary approaches often bring new ideas and applications in relevant disciplines. The multiple examples out of personal research experience elaborated how every occurrence followed this principle. The abilities to continue learning, especially new areas and even disciplines, is essential for sustainability in creation.

Cutting-edge technology developments in the forthcoming overwhelmingly digital era require not only typical or traditional interdisciplinary research approaches but more importantly digital control systems and coding for best efficiency and invaluable freedom in creation for individuals.

Ⅳ. References

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