

情報連携学部 情報連携学科 教授

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Profile

東洋大学情報連携学部情報連携学科・大学院情報連携学研究所情報連携学専攻教授。博士(農学)。東京大学大学院農学生命科学研究科准教授を経て現職。生命科学・医薬健康データなどの解析・予測が専門。人工知能を用いた情報工学にも精通し関連授業を担当。著書等に『タンパク質立体構造予測—de novoモデリング—、遺伝子医学MOOK 14 次世代創薬テクノロジー 実践：インシリコ創薬の最前線』((株)メディカル ドゥ)など。

Professor Shugo Nakamura belongs to the Department of Information Networking for Innovation and Design, Faculty of Information Networking for Innovation and Design and works on the Course of Information Networking for Innovation and Design, Graduate School of Information Networking for Innovation and Design at Toyo University. With a Ph.D. in agriculture, he served as associate professor at the Graduate School of Agricultural and Life Sciences at the University of Tokyo before joining Toyo University. He specializes in analysis and prediction of life science data and medical/healthcare data. He also has total mastery of AI (artificial intelligence)-based information engineering and teaches courses in that field. His published works include the paragraph dedicated to "De novo modeling" in the "Protein structure prediction" section of Genetic Medicine MOOK 14: Next-gen Drug Discovery Technology—Praxis: Forefront of In Silico Drug Discovery (Medical Do, Co., Ltd.).

Leader in Education

教育の担い手 Special Interview

工学から生命科学、そして情報学へ

実は私の博士号は農学です。一見、情報連携学部で何を教えているのかわかりにくいかもしれませんが。大学では工学分野へ進んだのですが、ゲノムやタンパク質などの農学・生命科学分野に、情報工学を応用する研究に携わってきました。「既存の枠にとらわれずに幅を広げたい」と考えて選んできた道のりです。そして現在は、ビッグデータの分析、AIや機械学習の応用など、情報連携のキーワードで表わされるフィールドの研究を手がけています。

情報連携学部では「ビジネス・コース」の授業を担当していて、企業や社会、自然界のビッグデータをどう分析し、どうビジネスに活かすか、といった応用面を見据え、授業を展開しています。大量のデータを体系化し分析すると、ある事象と別の事象の相関関係が見えてきます。例えば「気温が上がるとさっぱり味の商品が売れる」という相関関係は、店舗データの解析により実際に示すことができます。また、ある症状の人が投薬でどのような副作用が出るのか、既存の臨床的分析に加え、調剤薬局のデータからも抽出して検証するといった研究も可能になります。

これらはさまざまな分野と情報学とのコラボレーションですね。単独の数字データだけでは見えなかった事実や価値を、ビッグデータの解析によりマイニング(発掘)する手法は、社会に期待され今後飛躍的に伸びる分野と考えていますが、これらを担う人材は世界的に不足しているという現状もあります。

From Engineering through Life Science to Informatics

Actually, I have a Ph.D. in agriculture, so some may wonder what it is I'm teaching at the Faculty of Information Networking for Innovation and Design. I received undergraduate education in engineering, but I have been engaged in research on the application of information engineering to the field of agriculture and life sciences, which deal with genomes, proteins, and the like. I have chosen this path with the aim of broadening the scope of my work without having to be boxed in by the conventional disciplinary boundaries. And I'm now engaged in research in a field that can be described using the terminology of "information networking," including big data analysis as well as AI and machine learning applications. At the Faculty of Information Networking for Innovation and Design, I now teach "Information Networking Business Innovation Course" classes from the perspective of practical application, such as how should we analyze big data obtained from companies, society, and the natural world and use it for business purposes. Systematizing and analyzing a huge amount of data enables us to detect relationships between one phenomenon and another. For example, analysis of retail store data can prove the correlation between a rise in temperature and an increase in sales of food with a light, refreshing flavor. Moreover, a combination of the existing style of clinical analysis with analysis of data from prescription pharmacies also enables us to reveal what side effects will be caused to patients with a certain disease as a result of medications. This can be called collaboration between various fields and informatics. Based on the high level of expectation from society, I believe that the method of using big data to "mine" facts or value that have so far been hard to reveal with single numerical indicators will develop rapidly from now on, but the reality is that the world lacks human resources who can lead this field in the future.

イノベーションを担うすべての皆さんへ

情報化社会においてどう生きるか、社会とどう関わり、どう貢献していくか。そういうことを自分なりに考えられる人材を育てていきたいと考えています。これは情報連携学部の教育方針の一部ですが、狭義での情報の専門家を育てたいわけではありません。

どんな分野に進もうと、そこにはまだ活用されていないビッグデータがあるはずです。例えばそれを収集できる仕組みを考案して、体系化し解析できる形にする。近く実現されるモバイル通信の超高速化とあいまって、新しい応用が生まれるかもしれない。今後どんな展開が待っているのか、その瞬間に立ち会えるかもしれないと思うととてもワクワクするはずです。

こうしたイノベーションを担う人材になるために重要なのは、文系的素養と理系的素養を併せ持つことです。この2つが合わさって初めて新しい技術や視点が生まれます。また、ビッグデータ解析やAIについてもブラックボックスだと思わずに原理から理解し、強みと限界を知ることが重要です。一歩踏み込んだ技術の理解と2つの素養を持ってデータ解析などができれば、将来、どんな分野でも大いに活かせる場面があるでしょう。

学生の皆さんそれぞれが、自分の専門分野でイノベーションを起こせる人材になるために、ぜひ、情報分野にも関心を持ってもらいたいと思います。

Message to students as future leaders in innovation

I hope to foster future workers who can consider, in their own ways, how they themselves will live in an information-driven society, and how they themselves will interact with and contribute to it. This is part of the policy of the Faculty of Information Networking for Innovation and Design, but I do not wish to foster information specialists in a narrow sense of the word.

No matter what career path you choose, you will surely find untapped big data when you get there. For example, you may invent a system for collecting big data in your field, to make the data ready to be systematized and analyzed. When combined with super-high-speed mobile communications, which will be realized soon, your invention may inspire new applications. How can you help but feel extremely enthusiastic when you imagine yourself perhaps witnessing future exciting developments?

One of the important requirements for future professionals able to lead innovation is to have knowledge of both the humanities and sciences. Without a good combination of these two spheres of knowledge, you will not be able to create new technologies and find new perspectives. Furthermore, it is important for you to understand the fundamentals of big data analysis and AI, rather than just assuming that they are black boxes, and know their strengths and limits. If you can analyze data based on your in-depth understanding and insights about technologies, you can take advantage of such capabilities no matter what field you pursue your career in.

I hope that you as students will be interested in informatics to become individuals who can create innovation in your own fields.