An a(lmost)-c(ontact) structure on an oriented $(2n+1)$ -manifold M^{2n+1} is a pair $([\alpha],[\omega])$ of conformal classes of 1- and 2-forms α, ω with $\alpha \wedge \omega^n > 0$. For example, given a contact form α with $\alpha \wedge (d\alpha)^n > 0$, we obtain an a-c structure $([\alpha],[d\alpha])$. On the other hand, if α defines a codimension one foliation along whose leaf ω is closed (i.e. $\alpha \wedge d\omega = 0$), $(\mathcal{F}, \omega|T\mathcal{F})$ is a corank one Poisson structure, and $([\alpha],[\omega])$ is an a-c structure. I generalized the notion of confoliation due to Eliashberg and Thurston into higher dimension as intermediary a-c structures between these two examples. Recently, motivated by an effort of Verjovsky et al., Mitsumatsu constructed a corank one Poisson structure on S^5. In [11], I constructed a path of my confoliations connecting the standard contact structure on S^5 with Mitsumatsu's example. In [12], I constructed a corank one Poisson structure on $S^4 \times S^1$ while S^4 is not almost complex. In [13], I improve my confoliation in terms of bivector fields in order to move toward its quantization.

Seifert surfaces in $J^1(1,1) \approx S^3 \setminus \{*\}$ satisfies Bennequin's inequality, and surfaces in a contact 3-manifold are smoothly approximated by 'convex' ones. I [10] constructed a Seifert hypersurface in $J^1(2,1) \approx S^5 \setminus \{*\}$ which violates the inequality and is not approximated by a 'convex' hypersurface. Lutz modified the contact structure of $J^1(1,1)$ into exotic one. Using geometry of Brieskorn 3-manifolds, I [9] generalized the Lutz modification into $J^2(2,1)$. I obtained a 'convex' Seifert hypersurface which violates the inequality and obstracts symplectic fillability.

In [4] and [13] I constructed a certain immersion of a given contact M^3 to $J^1(2,1)$ by using approximately holomorphic geometry. This result has been generalized by Martínez Torres. In [8] I smoothly isotoped the standard S^3 in $J^1(2,1) \approx S^5 \setminus \{*\}$ so that the restricted contact structure converges to the Reeb foliation (by Legendrian submanifolds of S^5); and then becomes to an exotic contact structure. I explained the non-analyticity of Reeb foliation by using toric geometry on S^5.

Thurston and Winkelnkemper constructed a contact structure on a given open-book 3-manifold. I [3] showed that it comes from a symplectic filling if the monodromy is 'positive(right-handed)'. Loi and Piergallini showed that a 3-manifold is diffeomorphic to the boundary of a Stein domain iff it admits a 'positive' open-book. These results are later unified in Giroux's one-to-one correspondance between contact structures and stable positive stabilizations of open-books. I also showed that any contact structure on M^3 can be deformed into a spinnable foliation. This implies that the relative Thurston inequality holds for many foliations with Reeb components in contrast to the Eliashberg-Thurston theory. With collaborators, I obtained relevant results: See [7] for homological overtwistedness, [6] for Dehn fillings, and [5] for a generalization of Bennequin's isotopy lemma.

I also have a collaboration [1] with Fukui on (in)stability of certain foliations.