Moduli of $p$-adic representations of a profinite group

We construct the moduli space of $p$-adic representations of a profinite group of topologically finite presentation $G$ as a non-archimedean stack. As referred in [deligne2015comptage] one should not expect such moduli space to be representable by an algebraic stack as continuous representations $\rho : G \to GL_n(k)$ fix a compact lattices. We extend the classical generic fiber construction to the derived world which allow us to define a topology on derived analytic rings. Using the Representability theorem in the derived $k$-analytic setting, [porta2017representability], we show that such moduli non-archimedean stack admits a canonical derived extension which is representable by a derived $k$-analytic stack.