Branching pattern gives combinatoric structure of a rational function, it does not guarantee the existence of the function. For example, there exists no rational function for the branching pattern $(2^4), (2^4), (2, 3^2)$ but there exists a rational function for the branching pattern $(2, 3^2), (2^4), (2, 3^2)$, namely: $\frac{4(x^2+2)^3}{(4x^2-1)^3x^2}$.

For Riemann spheres (genus 0), there is a one-one correspondence between dessins, permutation triples, and belyi maps of degree n. We can use this correspondence to verify the existence of belyi functions for a given branching pattern. Furthermore, the correspondence can be extended to near belyi maps. Basic method to compute dessins of degree n involves the following two steps: (i) start from the dessin of degree 1, (ii) add an edge on all possible spots to find dessins of the next degree. This method has a huge growth of $\frac{(n-1)!(n+1)!}{2}$ which makes it impossible to compute all dessins of degree as small as 12 without imposing additional restrictions or constraints.

In this presentation we will discuss about an efficient way to compute dessins for a given branching pattern using multi-edge reduction method. The new approach is very fast and efficient on computing dessins, and thus, on proving the existence of belyi maps for a given branching pattern.