Algorithm $\mathsf{AdditiveToShamir}_{\mathsf{t},\mathsf{n},\mathbb{F}}(\mathsf{i}, \mathrm{X}, \mathsf{x}_{(\mathsf{i})}) \leftarrow \mathsf{y}_{(\mathsf{i})}$

Inputs: $i \in [n]$ as the party index
$\mathrm{X} \in [n]^t$ as a subset of t indeces
$x_{(i)} \in \mathbb{F}$ as a n-out-of-n additive share

Outputs: $y_{(i)} \in \mathbb{F}$ as the corresponding t-out-of-n Shamir share

1: Set $\mathrm{X}' \leftarrow \mathrm{X} \setminus \{i\}$
2: $\ell_i \leftarrow \prod_{j \in \mathrm{X}'} \frac{k}{k-i}$ as the Lagrange coefficient
return $y_{(i)} \leftarrow x_{(i)} / \ell_i$ as the Shamir share

References