

## Optimization Algorithm

Let  $0 \leq \gamma \leq 1$  and  $B = \sqrt{\gamma/\lambda} A$ . Then a minimizer of the objective function  $F$  is obtained by the iteration:

$$v^{(i)} = \arg \min_{v \in \mathbb{R}^N} \left\{ \frac{\gamma}{2} \|A(x^{(i)} - v)\|_2^2 + \lambda \|v\|_1 \right\}$$

$$z^{(i)} = \gamma A(x^{(i)} - v^{(i)})$$

$$x^{(i+1)} = \arg \min_{x \in \mathbb{R}^N} \left\{ \frac{1}{2} \|y + z^{(i)} - Ax\|_2^2 + \lambda \|x\|_1 \right\}$$

*Interpretation:* iteratively adjusted additive data perturbation of  $\ell_1$  norm regularized problem ...