

## About the author:

Vasil (Vasco) Yasenov is an applied statistician/data scientist. He previously authored "Causal Inference for Toddlers". Vasil holds a Ph.D. in economics and has crunched data at UC Berkeley, Stanford University, and Adobe Inc. His research has been published in major academic journals such as the Proceedings of the National Academy of Sciences, the Journal of Public Economics, and JAMA Pediatrics. His data work has been featured in The New York Times, The Washington Post, and The Wall Street Journal.

## About the book:

Alya is a brave little girl who loves hiking in the forest and eating mushrooms. When a fire destroys the village's mushroom encyclopedia, everyone is left guessing which fungi are safe to eat.

How can Alya create a new mushroom guide that helps her tell which ones are safe and which are not? A simple way of note taking and learning from patterns might just hold the answer.

### Comments for "Machine Learning for Toddlers":

"Yasenov wrote a second book? Did anyone even finish his first one?!"

**JENS HAINMUELLER, KIMBERLY GLENN PROFESSOR AND  
PROFESSOR OF POLITICAL SCIENCE, STANFORD UNIVERSITY**

"I liked Yasenov's first book better. Then again, I didn't read this one."

**LESTER LUSHER, ASSOCIATE PROFESSOR OF  
ECONOMICS, UNIVERSITY OF PITTSBURGH**

"Sure, I'll take a look... Just leave a copy all the way in the back of the very bottom drawer."

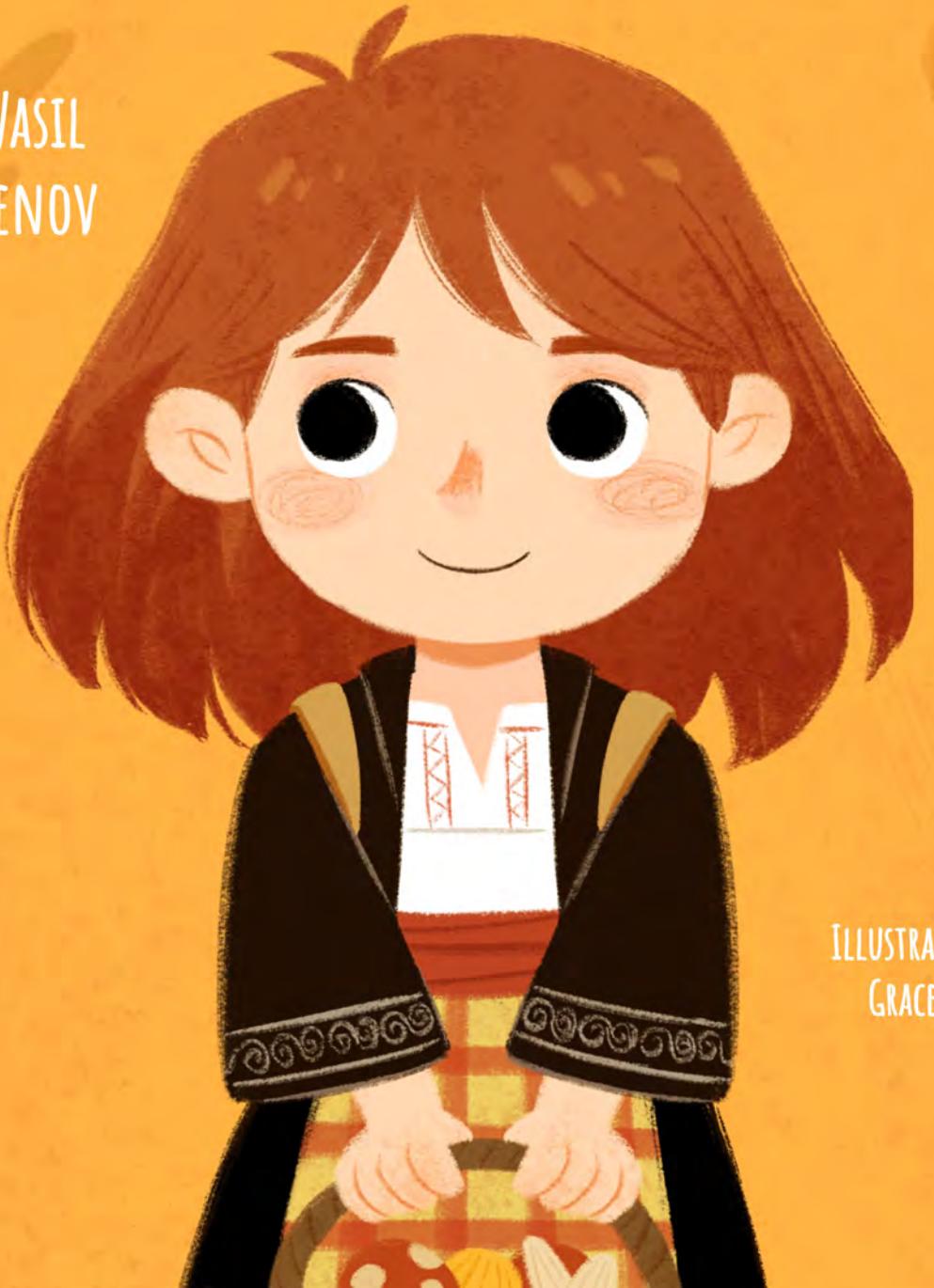
**VLADIMIR TYAZHELNICKOV, ASSOCIATE PROFESSOR OF  
ECONOMICS, UNIVERSITY OF SYDNEY**

"A bold contribution to the field of unnecessary metaphors."

**REVIEWER #2, STILL ANGRY FROM YASENOV'S FIRST BOOK**

# MACHINE LEARNING FOR TODDLERS: ALYA AND THE FOREST MUSHROOMS MYSTERY

BY VASIL  
YASENOV



ILLUSTRATIONS  
GRACE JI

To my niece

## Machine Learning for Toddlers: Alya and the Forest Mushrooms Mystery

Written by: Vasil (Vasco) Yasenov

Illustrated by: Grace Ji

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### A Note to Parents and Kids:

This story is about Alya learning to sort and classify mushrooms, like  
a scientist or a machine learning model. But in the real world, wild  
mushrooms can be dangerous—even to grown-ups! Never taste or touch  
mushrooms you find in nature unless a grown-up expert says it's safe.

# MACHINE LEARNING FOR TODDLERS: ALYA AND THE FOREST MUSHROOMS MYSTERY



ONCE UPON A TIME, UPON A TIME, IN A FARAWAY VILLAGE, THERE LIVED A LITTLE GIRL NAMED ALYA. ALYA WAS BRAVE, STRONG AND CURIOUS. SHE LOVED HIKING IN THE FOREST AND EATING DELICIOUS MUSHROOMS. EVERY YEAR, SHE LOOKED FORWARD TO THE VILLAGE

SPRINGTIME MUSHROOM FESTIVAL. BUT THERE WAS A PROBLEM THIS TIME: A TERRIBLE FIRE HAD DESTROYED THE ONLY MUSHROOM ENCYCLOPEDIA! EVERYONE WAS GLOOMY – ESPECIALLY ALYA. THERE WOULD BE NO FESTIVAL, AS NO ONE COULD TELL WHICH



MUSHROOMS WERE YUMMY AND WHICH WERE POISONOUS. ALYA WAS DETERMINED TO HELP. SHE WOULD MAKE A NEW MUSHROOM GUIDE AND SAVE THE FESTIVAL HERSELF! BUT THAT WAS A BIG AND AMBITIOUS GOAL. HOW COULD SHE EVER FIGURE OUT WHICH

MUSHROOMS WERE SAFE TO EAT? SHE HAD AN IDEA. ALYA GRABBED HER NOTEBOOK, STRAPPED ON HER HIKING BOOTS, AND PACKED SOME EGGPLANT-AND-GOAT-CHEESE SANDWICHES. SHE TOOK OFF INTO THE FOREST, WAVING GOODBYE TO HER MOM AND DAD.



ALYA WAS NOW OFF THE FACE THE MYSTERIES OF THE WILD FOREST. IT HAD ALL KINDS OF MUSHROOMS – BIG AND SMALL, SMOOTH AND BUMPY, RED AND BROWN. SOME GREW ON TREE TRUNKS, OTHERS IN SHADY GRASS. ALYA DIDN'T DARE TASTE ANY HERSELF,

BUT SHE KNEW ANIMALS WERE WISE AND KNEW HOW TO TELL THEM APART. SHE SAW SQUIRRELS NIBBLE HAPPILY ON SMALL BROWN MUSHROOMS, AND RABBITS SNIFF THE RED ONES AND HOP AWAY FAST. ALYA WATCHED AND TOOK NOTES.



SHE RECORDED EVERYTHING ABOUT EACH MUSHROOM: ITS COLOR, SIZE, SHAPE, SMELL, WHERE IT GREW, AND WHETHER THE ANIMALS LIKED IT OR AVOIDED IT. IT QUICKLY BECAME CONFUSING. SO MANY MUSHROOMS AND SO MANY DETAILS!

BUT SOON ENOUGH, SHE STARTED TO NOTICE PATTERNS: "AHA! THE RED ONES WITH WHITE DOTS? THE RABBITS NEVER TOUCH THOSE." "THE BROWN ONES THAT LOOK LIKE TINY UMBRELLAS? THE SQUIRRELS CAN'T GET ENOUGH!"



ALYA CHECKED HER NOTES AND DREW A LITTLE TREE ON A NEW PAGE.  
NOT A REAL TREE, BUT A THINKING TREE. EACH BRANCH ASKED A QUESTION:  
"IS THE MUSHROOM RED?", "IS IT SMALL?", "DOES IT GROW ON

A TREE STUMP?" AT THE END OF EVERY BRANCH, SHE WROTE:  
YUMMY OR POISONOUS. IT WAS HER WAY OF PREDICTING WHICH  
MUSHROOMS THE ANIMALS WOULD CHOOSE TO EAT



AND WHICH THEY WOULD AVOID BASED ON HER NOTES. ALYA THEN SPOTTED A STRANGE MUSHROOM SHE HAD NOT SEEN BEFORE: LIGHT BROWN, SHAPED LIKE A BELL, GROWING BESIDE A MOSSY ROCK. SHE PAUSED.

THIS WAS HER CHANCE TO TEST WHETHER HER THINKING TREE REALLY WORKED. WOULD IT HELP HER CORRECTLY GUESS IF THIS NEW MUSHROOM WAS SAFE?! SHE FOLLOWED THE TREE'S BRANCHES IN HER NOTEBOOK,



AND SAID SOFTLY, "THIS ONE SHOULD BE DELICIOUS." SHE WAITED. A SQUIRREL CAME BY, SNIFLED IT, AND MUNCHED HAPPILY. ALYA GRINNED. HER THINKING TREE WORKED! NOW ALYA KNEW SHE COULD TELL THE SAFE MUSHROOMS APART FROM

THE POISONOUS, AND THE FOREST MYSTERY WAS FINALLY SOLVED! SHE RETURNED HOME WITH PAGES OF CAREFUL NOTES. THE LIBRARIAN TURNED THEM INTO A BEAUTIFUL FOREST MAP SHOWING WHICH MUSHROOMS WERE SAFE TO EAT.



THE FESTIVAL WAS SAVED! THE MAYOR HELD UP ALYA'S MAP PROUDLY, AND VILLAGERS USED HER GUIDE TO EXPLORE AND GATHER MUSHROOMS WITH EASE. THERE WAS MUSIC, LAUGHTER, AND STEAMING BOWLS OF MUSHROOM STEW.

FOR EVERYONE. BUT THE HAPPIEST OF ALL WAS ALYA, FOR SHE HAD DISCOVERED SOMETHING WONDERFUL: THAT BY WATCHING, NOTICING, AND LEARNING FROM PATTERNS, SHE COULD SOLVE MYSTERIES, BIG AND SMALL.

THE END

## Acknowledgements:

Massive thanks to my long-suffering wife Chelsea! She's been my sounding board, editor-in-chief, and chief cheerleader through every adventure.

Cheers to friends & colleagues whose encouragement after my first book was an incredible boost.

To my grandparents and parents who taught me the joys of mushroom foraging.

A special Thank You to my friends on the back cover. With your help, this story will reach even more little explorers.

Lastly, to Alya, who inspired this whole story in the first place.