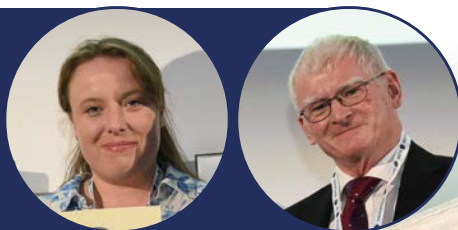




TopNav:

Eight Waypoints, a Compass and a Fair Bit of Guessing

By Alice Robinson
and Simon Cassia



When most families bond over weekend walks or shared hobbies, we chose something that was, quite literally, on a higher plane.

We entered TopNav, the RIN's annual navigation competition in which light plane pilots and navigators complete a 120 nautical mile navigational flight without hesitation, repetition or deviation (from the route).

For those outside the navigational world, navigational flying might sound like a pointless relic of the past; something from the days before GPS and glass cockpits. But to those in the know, it's an art form: the delicate balance of timing, map reading, accurate flying and calm (usually) communication, all while flying a couple of thousand feet above the ground.



B1166 crossing the River Welland

So What Is TopNav?

TopNav is a nationwide event in which pilots and navigators plan and fly an eight-waypoint route, taking a photograph of each waypoint as they fly over it. Competitors must remain within 0.5 nautical miles of track and reach each waypoint within one minute of their planned ETA. This is quite a tough test of precision, with little margin for error.

The competition is organised each year by Mark Batin and his team and runs simultaneously from four airfields across the UK. This year it was White Waltham, Bodmin, Tatenhill and, our base for the day, Conington, a friendly, well-kept airfield near Peterborough where the café's bacon rolls alone are worth the flight.



Meet the Aircrew

Simon, the pilot, is a slightly grumpy 68-year-old with a fair few hours under his belt, and the navigator was his 32-year-old daughter, Alice. This was the sixth time they competed in TopNav; when they first entered in 2017, Alice had never flown in a light aircraft and knew nothing about dead reckoning navigation. Neither proved to be an obstacle; she quickly showed an uncanny knack in translating what was on the map into its representation of the ground, much to the relief of the pilot. With six competitions now under her belt she handles the navigation task with skill and panache.

The Preparation

We arrived at Conington on a bright Saturday morning and were briefed by the local RIN representative, David Broughton. It's worth attending Conington's event, if only to hear David's fascinating reminiscences of his time as an RAF navigator. David handed us our envelope containing the route, which we eagerly scanned to find out what lay in store for us for the day. Which part of the beautiful north Norfolk coast would we be seeing today? Any chance of a sneaky look at Sandringham? But no, our route took us

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over such delights as Bedford, Rugby and Peterborough. At least they'd be big and easy to find – we hoped!

We had 90 minutes to plan the route, calculate headings, fuel, and timings, and prepare a detailed navigation log. The challenge in TopNav is that GPS isn't allowed for navigation; everything must be done by dead reckoning using a map, compass, stopwatch and Mk 1 eyeballs.

Alice settled down with her pencils, map, ruler, protractor, and drift calculator to plot the legs and soon had the waypoints marked and each leg's heading, timings, safety altitudes, and frequencies noted in the log. Meanwhile, Simon concentrated on potential flight safety hazards and ensuring that their route avoided controlled airspace and any risk of infringement.

Into the Wild Blue Yonder

We flew the route in our Alpi Pioneer 300, a sleek Italian two-seater that cruises comfortably at around 120 knots and handles rather like a sports car. Our flight over Eastern England took us just over an hour to complete. At each waypoint, Alice had to identify the correct ground feature and take a photograph of it. Mark, the course setter, had cunningly chosen some features that were almost impossible to identify from the air; we challenge anyone to spot the junction of the A5 and the River Tove at Towcester from 2,000 feet!

The Return and the Reckoning

After an hour of concentrated navigation and diligent airspace avoidance, we landed back at Conington and gratefully got stuck into on the tea and sandwiches provided free of charge at the airfield.

We handed in our GPS tracker to David and emailed our log and photographs to Mark for scoring. The TopNav

scoring system rewards not only accuracy in navigation but also the airmanship you demonstrate from the entries in your flight log. Any infringement of controlled airspace or breach of flight safety rules results in disqualification so discipline is just as vital as accuracy.

We didn't expect to feature near the top, but apparently Simon's accurate flying and Alice's meticulous navigation and log keeping impressed the judges. When the results were announced, we were delighted to be invited to the RIN AGM and drinks reception, where we received our awards and custody of a rather handsome trophy for the year.

Why You Should Enter

TopNav is a chance to enjoy the buzz of finding the right waypoint (or the frustration of flying round in ever decreasing circles over an objective that you do not recognise and which does not appear to be on the map). But most of all it is tremendous fun, particularly when it brings together the generation of aviators who use dead reckoning with those who navigate only by touchscreen. Rather appealingly, it is one of the few aviation events where skill and precision matter more than horsepower and expensive avionics.

Whether you're a seasoned instructor with thousands of hours or a complete newcomer to light aircraft (like Alice was), there's real satisfaction in planning and executing a flight with that level of focus. It's an enjoyable challenge that sharpens your flying skills and renews your appreciation for the fundamentals of navigation, and it reminds us why we go flying in the first place.

A Final Word

If you're a GA pilot looking for something different next season, consider giving TopNav a try. You don't need a high-performance aircraft or a professional navigator, just enthusiasm, preparation, and a sense of humour. You might even win it. But even if you don't, you'll spend a memorable day in the sky, honing your skills and enjoying some of the best company aviation has to offer (and a free meal at the airfield).

As for us, we'll be back next year to defend our title. Alice has already updated her CV to include "Winner of national flight navigation competition."

And fair enough; she's earned it! ■



RIN President Professor Washington Yotto Ochieng presenting 2025 TopNav Overall Winner Award to Alice Robinson (Navigator) and Simon Cassia (Pilot)



Through fear to the skies

If someone told me three years ago that I was going to win 'best-on-track' category in a Navigational Flight Competition, I would have laughed with disbelief, because three years ago I had no clue what navigation was all about, let alone I had no clue how to fly an aeroplane. Coming from an artistic family, geography, chemistry and maths weren't on the list of my favourite subjects. In fact, having dyslexia and dyscalculia meant that I was really struggling throughout school, so there wasn't any room in my wildest dreams for becoming a pilot.

The idea of 'I want to be a pilot' appeared at a later stage in my life when I turned 30. I was really afraid of heights my whole life so I have decided that I will take flying lessons and that I will slowly expose myself to higher altitudes with each lesson.

Having searched for a reputable flight school to do my flight training, I was introduced to the West London Aero Club in Maidenhead, a place where Air Transport Auxiliary's headquarters was based during World War II, and where Prince Philip had his flight training after Queen Elizabeth acceded to the throne. It's a beautiful airfield, rich with its history and a generously sized grassy runways.

"Being aware that women are a small 5% minority in this field, I felt extremely anxious walking into the flight school for the very first time."

Karina Swinhoe-Standen,
Private Pilot
Received TopNav 2025
Best on Track Award



Being aware that women are a small 5% minority in this field, I felt extremely anxious walking into the flight school for the very first time. All unnecessary as I received a very warm welcome from the male members there and was introduced to the Friday Flying Club, a place for experienced pilots where student pilots were welcomed to back-seat the flights to learn and observe between regular lessons.

So my flight training has begun. Being able to control the level of exposure to the height while flying has paid off when in July 2024 I have earned my wings and became a private pilot. I could finally go up Burj Khalifa and not give up half way through.

However the flight training, wasn't always an easy ride. You could say that I was foolish for not doing my research properly, but I have entered the course completely unaware that a certain level of maths knowledge was required to pass two exams on the course, things like calculating groundspeed, fuel, and time for each leg of a flight, converting map distances to groundspeed and time, accounting for wind to determine true airspeed and heading, and managing fuel based on consumption rates. Knowing my history of maths, I had two options: One was to give up and walk away from the course, never knowing if I was going to make it. Option two was to face the fear and do it anyway. I chose the latter. I have decided to use dyslexia and its unique cognitive style to my advantage as it's offered fresh perspective on creativity, problem solving and a visual-spatial reasoning, which actually became very helpful in my flight training.

"TopNav competition offers a unique opportunity to fly a route given to you on the day of the competition without a use of GPS."

When the 2025 TopNav competition was launched, a member of the Friday Flying Club asked me if I would like to join him as navigator. Having had my license for over a year now and being fluent in all calculations and PLOG management, I immediately agreed. TopNav competition offers a unique opportunity to fly a route given to you on the day of the competition without a use of GPS. When we qualify as private pilots we often switch to GPS. We therefore neglect the traditional navigational methods we learned during the flight training. Things such as compass and stop watch also known as dead reckoning, use of CRP1 flight computer, and PLOG writing. It is a very useful method when all modern tools like GPS fail.

Weeks before the competition the pilot and myself have made up a route with 5 unique points on the ground to go and find during the 50 minutes exercise. From this exercise, we have learnt that there has to be a clear division of roles and responsibilities. Because we were both pilots we were both trying to fly and navigate at the same time. Realising that we had to keep to our roles and responsibilities has allowed us to be more accurate and focused during the day of the competition.

On the day of the competition we were given 5 coordinates of latitude and longitude that we had to find on the chart. Using Google maps we took mental snapshots of what those coordinates would look like from the air. The task was to fly the route as accurately as possible, keeping a detailed log of each flown leg, taking photos of the coordinates once they were found. The Pilot's role was to fly to the agreed heading, speed and height and my role, as Navigator, was to give the pilot his headings to fly, record time from departure of the first leg, provide an ETA, manage the radio and take photos of the coordinates all while keeping an eye on the time to ensure we're on track.

A few weeks later, the results were announced and we were extremely proud to score 96% of accuracy flying



to submitted route. Massive regards go to my pilot in command for flying the route to the agreed time and speed. Key elements to our success were clear communication, understanding of the individuals role and responsibilities, having a well defined understanding of the objectives and putting trust in executing individual tasks.

The world of aviation offers something unique to everyone who joins it. If you have ever considered learning to fly but haven't done so yet, to you I say it is the best decision you will ever make. It will stretch you, it will challenge you, it will make you reach your limits to only realise you can go further. Embarking on a flight training journey is an exciting decision that will open up a world of personal growth and unique experiences, to which I invite you, so perhaps one day you can share your story like I did mine today. ■



The General Aviation Navigation Group (GANG) follows usage and developments in GA navigation, notes problems and passes recommended solutions to appropriate authorities and organisations. It also arranges lectures and symposia, makes awards and runs the highly popular TopNav competition each year.

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